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SIDE LIGHTS ON BIRDS



Frontispiece

LABRADOR FALCON

SIDE LIGHTS ON BIRDS

An Introduction to the Study of British Bird Life

BY

H. KNIGHT HORSFIELD

*Member of the British Ornithologists' Union
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Weekly Post" Author of "English Bird Life"
"In the Gun-Room" etc etc*

WITH A FOREWORD BY

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*ILLUSTRATED BY PLATES AFTER
J. WOLF AND A. THORBURN
AND PHOTOGRAPHS FROM NATURE*



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TO
A. H.
IN MEMORY OF DEBTS THAT
CAN NEVER BE REPAYED

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FOREWORD

Ornithology, perhaps in as great a degree as most branches of zoology, is rapidly progressing.

New facts are constantly being discovered, and within the last decade numbers of observers have arisen who have followed varied lines and methods of research: these have thrown new light on many problems that baffled our forefathers.

Students are aware that to keep reasonably abreast of the literature relating to bird life, access to a large number of works in various languages is indispensable.

At the same time by reason of nature teaching in schools, the formation of numerous local Natural History Societies and other causes, the number of young students taking a scientific rather than a merely casual interest in birds have immensely increased. Therefore a work that aims at discussing some of the problems which have arisen as the result of our latter-day knowledge, especially on the philosophic rather than the technical side is a thing to be desired. "Side Lights on Birds," is designed to fulfil this need, and should serve as a useful guide, especially to those of the younger generation.

Mr. Knight Horsfield is my oldest bird friend. We commenced to study birds together as school boys in the year 1869, and have been companions on many delightful rambles in search of bird-lore, down to recent times. Thus I have much pleasure in writing a Foreword to these Side Lights.

I consider Mr. Knight Horsfield to be eminently suited to be their Author, by reason of his wide knowledge of birds in life and in literature, and because he brings to bear upon the various problems discussed, a philosophical and impartial mind.

W. EAGLE CLARKE.

INTRODUCTION

Birds, like men, may be looked at from many points of view. Admirable text-books exist that tell us of the material side. But there are many aspects of bird life that lie outside the text-books.

The idea of this book is to try to show something of the animating principle of the bird, how it lives, moves, and has its being, how it reacts to the varying conditions of its environment; how its wonderful life expresses itself in its equally wonderful and beautiful form. Not that there is anything new in this, but the scope for new treatment is illimitable, especially in view of the new facts constantly coming to light.

For the most part, the deeper questions relating to bird life—migration and so on—have been dealt with by specialists in spacious volumes not readily accessible to the army of young ornithologists who are growing up around us. In these cases I have endeavoured to summarise the work of the leading authorities: to show so far as my limitations permit, how our knowledge stands to-day: to give younger readers especially a general view of the subject before they come to grips with the severer technical side.

As Natural History editor of the "Yorkshire Weekly Post," it has come within my province for the past twelve years to watch week by week the progress of bird-lore. Notes, sometimes from unexpected quarters, have reached me throwing light on various questions. These I have incorporated in the text in their proper places, together with the comments held to be appropriate.

Sometimes the belief is expressed that the bird as a subject for study is being played out. This can never be until the whole problem of life itself is solved. The anatomist and the physiologist may possibly see a nearing end to their task, but for the psychologist and philosopher, for the artist and the poet, the lowliest bird is still a part of the all-surrounding mystery of things against which the human mind is destined ceaselessly to beat.

INTRODUCTION

If then, one can throw any side-light, small as it may be, on the marvellous activities of Nature, the work is well worth doing.

I am indebted to Dr. Eagle Clarke for advice and help, and for his revision of some of the sections, and to Mr. Archibald Thorburn, for most kindly permitting me to use one of his sketches. Also to Messrs. Wheldon and Wesley, Limited, for their kind permission in allowing me to use the frontispiece. This is from a picture by J. Wolf, given to me by the late Mr. H. E. Dresser, author of "The Birds of Europe."



LONG-EARED OWL, AND FIELD MOUSE

To face p. 13

PART I

STRUCTURE OF BIRDS

CHAPTER I

SKELETON, FEATHERS, WINGS, WING EXPANSES, BEAKS

This subject has been worked out by anatomists in the utmost detail, and we have no desire to follow the scientists in their deeper researches. Our aim is merely to give a concise view of the general aspects for the use of those who have neither time nor opportunity for a wider study.

To take the skeleton first :—This is seen at once to be constructed on lines which differ essentially from those of an animal destined for a terrestrial life ; it is formed for two supreme ends, lightness and strength. The shape is that of a ship ; the sternum or breast bone, forming the keel, runs to a thin edge in front, and serves to cut the air exactly as the prow of a boat cleaves the water. The bones, powerful as they are, are for the most part hollow, and their lightness may be estimated when it is stated that a pelican five feet in length, and weighing 25lb. in the flesh, possessed a skeleton of barely 23 ounces. Again, the pectoral muscles which control the wings are of enormous power ; these facts taken in conjunction with the great lung capacity and the disposal of air-sacs in various parts of the body,

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as well as the construction of the feathers, all serve to render the bird-form especially suitable to journey through the air.

Another peculiarity admirably adapted to assist flight is the formation of the bird's neck. This differs from that of mammals in both length and flexibility, for whereas the terrestrial forms have only seven cervical vertebræ, most birds have fourteen, and the swan twenty-three. The advantage of this is obvious. It enables the bird in flying to bring the head so far forward that the centre of gravity is fixed at the point directly below where the wings join the body, thus giving a perfect balance. Further, the lower muscles of the bird's neck bend most easily backwards, while the upper muscles bend naturally forward. Thus, when at rest the neck takes the shape of the letter S as seen most plainly in the graceful form of the swan. This is the position assumed for walking, as it alters the centre of gravity back again to a point above the base of the toes. One striking example of the flexibility of the neck is seen in the wryneck, which is able to turn its head completely round. A further remarkable provision of nature is in the formation of the legs and feet of birds. A stork is able to stand on one leg for whole days without fatigue, the reason being that the legs are kept out-stretched without any exertion of the muscles. If the legs of a dead fowl are bent downwards it will be observed that the claws close of their own accord and remain locked. This enables birds to go to sleep at night with claws clasped automatically on the branches, and the hold is retained until the percher, by a voluntary effort, releases it.

The feather is composed of three parts : the quill, the shaft, and the vane ; the quill firmly

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inserted in the skin, is hollow ; higher it becomes the shaft, which is solid, with a groove down the centre, from both sides of which the vane, the fine filaments, which can be expanded or contracted, spring. At one time it was believed that these filaments contained " natural oil," which in the case of water-fowl, served to keep the feathers dry ; now it is known that the filaments can be brought together so tightly that all moisture is excluded. This is done by the muscular action of the living bird ; if the dead body of any water fowl be placed in water, the feathers at once become soaked and sodden.

The growth of feathers is a process entirely different from the growth of hair in mammals. The embryo feather, with quill, shaft, and vane complete, is moulded in a minute capsule, which appears above the skin ; the feather then appears, and slowly develops to its full size. This process is repeated more or less completely at every moult the new feather forcing out the old. Light, strong, and elastic, the material of which a feather is composed, is not to be found elsewhere in nature. It is neither bone nor flesh, membrane nor tendon ; it has definite work to perform, and possesses a constitution peculiarly its own.

The miracle of the growth of a feather—so simple yet so complex, and destined to fulfil so many pre-conceived ends—was one of the marvels in nature that led Alfred Russell Wallace to declare his fixed belief in a Higher Intelligence that works apart from the mentality of the organism itself.

In a letter on this subject to the author he wrote :—" How all the infinitely complex and wonderfully regular processes of growth and development of living things actually occur, how

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the mass of cells, ever being formed anew, yet carried to all parts of the organism, and then successively moulded into such complex and diverse forms as bone and skin, nerve and muscle, hairs, horns, and feathers—to say nothing of the infinite variety of vegetable structures and products—is relatively unthinkable, but how they can be so formed by the agency of the mind of the organism itself : that is, that the organism builds itself through forces, laws, and directing will that inhere in itself, and have no other and more fundamental source than its own chance aggregation of atoms—is to me absolutely unthinkable. Such theories are far more difficult to conceive than any amount of action and influence of Spiritual Beings to escape which they were formulated.”

It may here be noted that the limbs and the part of the plumage first to be developed are those first needed by the chick on leaving the egg. For example, the first act a young partridge is called on to perform is to scratch in the earth, and pick up insects. For this it needs strong legs, bill and neck, as well as a protective covering of down. These parts are, therefore, the first to be developed, the wings coming later. A young thrush, on the other hands, has its wings fairly developed, when only a few tufts of down appear on the body.

WINGS.

The basis of the wing is an osseous framework, roughly corresponding with the human arm—which consists of the true arm, fore-arm, and hand. In the bird the true arm is a cylindrical hollow bone, the fore-arm two parallel bones, and the hand, not flexible as in the human, but forming a rigid support for stiff, elastic feathers.

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These feathers (the primaries) vary greatly in different species. By their length, rigidity, and flexibility, and their shape, they decide the speed and characteristics of the bird's flight. They are long and pointed in birds of the hawk type; shorter and rounded in species like the partridge. The feathers growing from the fore-arm are termed secondaries, while from the base of the hand springs the winglet or bastard wing, as it is often called. The study of the conformation of wings is most interesting. Birds of no two species, or, at any rate, of no two genera, fly exactly alike, and the wing formation in each case differs in order to meet the different requirements.

The flight of the night-feeding birds is perhaps the most remarkable of any. How is the airy buoyancy attained which enables them, the owls especially, to waft themselves, soundless as shadows, along the dark hedge-rows and across the gloom-hidden fields? In the owls the number of quill feathers is equal to that of birds of the most powerful wing, giving them the greatest facilities for sustained and rapid flight. Their noiseless movements are not attained by any diminution of force. But the texture of the feathers differs essentially from that of the falcon and of most other birds. It is of the downiest softness, and the fibres of the wing-webs, being of unequal length, allow a free passage to the air, and are so pliable that they yield to the lightest pressure. This is the secret of the night-bird's flight. "The way of the bird in the air" is one of those marvels that have puzzled many thinkers besides Solomon. The same wondering train of thought that arose in the mind of the upward gazing patriarch in the far-off past, springs up in the mind of the naturalist to-day, as his eye

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follows the rapidly ascending form of the lark, as it dwindles in size, rising higher and higher, or, as he traces the course of the herring gull returning seawards in the evening, its long, wide-spread wings bearing it steadily onward with hardly a perceptible beat: or, as he watches a company of dunlin wheeling and turning in perfect unison, their white underparts flashing in a momentary burst of sunshine, only to sink once more into invisibility, swallowed up in a grey cloud background.

Although all wings were originally made to fly with, though a few have become diverted from their original purpose, they are by no means all made to one pattern. In form, colour, texture and structure how many variations we see. Their number alone remains constant: in vertebrates it is invariably two; in insects it is always either two or four. Thus we may liken birds to monoplanes, and butterflies to biplanes. The power of flight is practically confined to the two classes, birds and insects, and within these two orders, it is a well-nigh universal accomplishment. Still there are exceptions to this as to most rules. For instance, bats fly, and ostriches can't; and among the insects, grasshoppers, worker-ants, and certain female moths are among those which, for some reason or other, would seem to have been unjustly deprived of their birth-right. Still the great majority of insects have acquired mastery of the air, and it is certain that no invertebrate out of the insect class may ever aspire to do more than crawl, swim, or wriggle through life. The two great winged classes are for ever pitted against one another in the struggle for existence, and this, says Professor Arthur Thomson is "practically the most important conflict of classes the world knows."

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Early vertebrates turned their hands to flying, to such good purpose that ultimately the hand became transformed into a wing, and in the bird three fingers were sacrificed. It is imperative that the texture of the wings be smooth and yielding. The "leather wings" of the bat and the rainbow-like pinions of the dragon-fly are formed of membrane, transparent and gauzy in the latter, brown and opaque in the former. The butterfly and the bird protect their wings with a covering of scales and feathers, both arranged on the over-lapping principle, like the tiles on a roof, being attached at their bases to the wing, but having the extremities free. This feather covering gives the bird's wing an immense superiority over the bat's for if a feather or two be injured it can be replaced, whereas an injury to a bat's wing involves total disablement. The difference is akin to that between a window formed of many small panes and one consisting of a single sheet of glass. The fragility of the dragon-fly's wing may be the reason why it is equipped with four. We recently released a home-bred dragon-fly in the garden. A few days later it was re-caught, one of the wings having been torn right off from the base. Still, the insect was able to fly, and to maintain a tolerably straight course for a short distance.

Winged creatures differ considerably in their manner of disposing their pinions when at rest. In butterflies, the wings are closed over the back, making them inconspicuous from above. They usually adopt a slightly sideways attitude in order—it has been tentatively suggested—to reduce the shadow. It may be readily seen that if the butterfly leant over sufficiently towards the sun, the shadow would disappear altogether. Such a habit could not fail to be a great pro-

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tection as a strong shadow will sometimes give a creature away completely, as in the case of minnows, which will themselves be almost invisible, while their shadow is reflected in the sandy river bottom with startling distinctness. Dragonflies rest with wings out-spread, but they are so transparent that the grass shows through them undimmed. The lady-bird skims past on wide-spread pinions with wing-cases motionless and a little raised to give play to the true wings.

Then it comes to rest on a grass blade and proceeds to furl its sails and it takes an appreciable time before the long gauzy wings are safely bestowed within the seemingly inadequate cover provided by the black-spotted tightly fitting elytra. Finally, however, the last projecting little brown corner of wing, which has been left hanging loosely out like a little tail, is drawn in and packed up. The wing-cases shut down like a tiny lid, and the lady-bird runs down the grass-stem, as if it had never known the exhilaration of a dash through space, and no one would ever guess the precious possessions it carries folded so neatly on its back. The beautiful wings of the earwig, when not in use, fall into a multitude of complicated folds, so that they no longer interfere with the little creature's movements amid the petals of the dahlia and between the cracks of boards.

The jointed structure of the bird's and the bat's wings enables them to be folded close to the sides like a foot-rule when not in use, though here again the bird has the advantage, for its wings fit closer to the figure than do the more cumbersome appendages of the bat. The form of the wing determines the nature of the bird's flight. In the best fliers—the swifts and falcons, for example—the wing is sharply pointed and the

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outer feathers are the longer. In birds such as the partridge and grouse the wings are rounded. Wings may be also used in some instances for the purpose of a weapon, for protection for the young, and as a flipper under water. Nearly all birds proceed by beating both wings together as a boat is propelled by a pair of oars. But there are exceptions to this rule. Both the swift and the house-martin at times progress by beating each wing alternately. Mr. E. P. Butterfield has observed that this peculiarity may also be seen in the greenfinch, in the love season but at no other time.

An interesting observation is made by Mr. F. W. Frohawk in regard to the aerial movements of lapwings during the nesting season. He points out that it is the male bird alone that carries out the performance, the power being due to the remarkably large, rounded wings, the primaries when expanded forming a paddle-shaped outline, while in the expanded wing of the female the primaries form a continuous line with the secondaries. Mr. Frohawk states that the difference is so marked that the sexes can be distinguished when flying.

In a paper in "Country Life," Mr. Frohawk gave the following table showing the wing-spread of the various birds, in relation to their weight.

Expanse.			Weight.			Expanse.			Weight.		
Inches.			lb.	oz.		Inches.			lb.	oz.	
Barn Owl	36		0	8		Mallard	35½		3	0½	
Pheasant	31½		2	12½		Teal	23½		0	10½	
Partridge	20½		0	15		Common tern ..	31		0	4	
Moorhen	20		0	11		Storm petrel	13½		0	1	
Lapwing	29		0	10½		Guillemot	25½		1	12½	
Curlew	37		1	11		Little grebe	15		0	6½	
Golden plover	22½		0	6½		Puffin	21½		0	14½	
Snipe	17		0	4		Manx shearwater	32		1	2	
Jack snipe	13		0	2		Turnstone	18		0	4½	
Heron	68½		3	6		Razorbill	25		1	6	
Gannet	70		4	4		Bean Goose	58½		7	3	
Gt. black-backed gull	63		2	14		Redshank	20½		0	4½	
Mute swan	86		18	14		Bullfinch	9½		0	1	
Golden-crested wren	6		81	grains		Bar-tailed godwit	26		0	6½	

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This table affords the means of making some remarkable comparisons. Thus the pheasant and the great black-backed gull have approximately the same weight to carry, yet the latter has a wing-spread more than double that of the former. The guillemot, singular also in the respect that it lays the largest egg in relation to its size, has 1lb. 12½ ozs. to bear on a wing-spread of 25½ inches, whereas the tern has only 4 oz. to sustain on an expanse of 31 inches.

It might be imagined that the birds with the widest wing area in proportion to their weight were those of the swiftest flight, but this is by no means the case. Both the guillemots and the pheasants, by reason of their powerful pectoral muscles, and their rapid wing beats, contrive to reach a speed greater than that of the gulls and terns, but, on the other hand, there is no doubt that the wider wing-spread combined with lightness of body, gives the bird an infinitely greater mastery of the air, and that all the species noted for their graceful evolutions possess these features in a marked degree.

BEAKS.

“ Practice makes perfect ” is a motto which applies not only to the worker but to the organs of his body, the tools with which he works. Organs that are put habitually to the same use tend to change, slowly, imperceptibly, until they become more and more in harmony with the work they have to do. The bird’s bill illustrates the principle perfectly, and by merely looking at the bill alone we are able to form some clear conjecture as to the life, habits, and environment of the bird to which it belongs.

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The bill in itself is simply a horny sheath enveloping the jaws. Its primary use would appear to be that of a pair of forceps in order to recompense the bird for the absence of hands. It is an indispensable adjunct in all the affairs of life, though its chief use is to pick up food.

Birds obtain their food in many diverse ways. The eagle carries its prey to its eyrie, and then tears it limb from limb. For this purpose a strong, hooked, sharply-pointed beak is necessary. The shrike, too, is a bird of prey on a smaller scale, and its beak may be likened to that of a miniature eagle. The feathers do not reach to the base of the vulture's beak—the neck indeed, is partly bare—otherwise the plumage would become soiled with blood when the fierce bird thrusts its mandibles deep into the carrion. Flies caught on the wing form the staple diet of the nightjar, hence in this bird length of bill is sacrificed for great width; and flies find it difficult to escape the gaping jaws, guarded by their array of bristles. We see the same principle at work in the bills of the swifts and swallows. Insect-eating birds, such as the robin and hedge-sparrow, may be distinguished from grain-eaters by their soft, slender beaks, which though excellent for intercepting the darting insect, would be useless for breaking and tearing apart hard shells or husks. For this purpose, sharp, powerful beaks, like those of the finches, are requisite. For the bird nourished on the seeds to be found in pine cones a peculiar and special instrument has been provided. The bent and seemingly misfitting mandibles of the crossbill will be seen to be admirably adapted for the work they have to do. In the woods we may sometimes hear the tap-tap-tap of the woodpecker, as it sounds the trees, in search of grubs :

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its strong beak may be described as a kind of living adze, combined with a pair of pincers.

Wherever the luckless worm or insect may seek refuge, it is pursued by some relentless beak, which seems to have been expressly designed for its destruction. The first creatures to take up their abode in the underworld must have congratulated themselves on having at last found a safe hiding-place from their hereditary foes. But their satisfaction would be short-lived. Soon the snipe came along, probing the soft ground with its long beak, so delicately sensitive as to detect at once the presence of any concealed victim. The oddly-shaped bills of the spoonbill and flamingo are both useful tools for their purpose. The latter has its lower jaw in the shape of a pipe, in which lies the tongue, and the upper mandible forms a lid. Water is sucked into the pipe, then the entrance to the pipe is blocked with the tongue, so that only the water can be squirted through, while solid food is retained. The long sharp beak of the heron forms an admirable spear for the harpooning of fish, but the pelican prefers to "net" its victims in the large pouch provided for the purpose. Pelicans work in concert "rounding-up" the fish into a corner, and then scooping them up. As a rule, the beak is an organ more useful than ornamental. We have an exception in the case of the puffin, however, which in order to enhance its charms during the breeding season ornaments this rather prominent organ with crude stripes of blue and orange. Many of the gulls have really very beautiful bills, the blending tints on that of the herring-gull are like a sunset sky, with a vivid orange spot on the lower mandible to represent the sun. The cumbersome structure which the

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hornbill manages to balance on its head, with a deceptive appearance of great weight, is somewhat of a problem to naturalists, though we have seen it suggested that it may serve as a resonator to increase the power of the voice, the characteristic note of these birds being between the bray of an ass and the shriek of an engine whistle. How far the form of the bill affects the voice is an interesting question; and it is stated that some birds, the cuckoo for example, will sing without opening the beak at all.

In other cases sounds are made by the beak alone, notably in the stork, which clatters its two mandibles together like a pair of castanets.

BIRDS' NESTS

CHAPTER II

ORIGINAL NEST BUILDERS. SWALLOW'S CHANGE OF HABIT.
DECORATIVE SENSE IN BIRDS.

Few things in bird-life are more interesting than the manner of nest-building. The views of the feathered architects of what constitutes a suitable residence, the choice of a site, and the nature of the material used, are curiously diverse. In Great Britain we have nothing sensational in the way of nests. We have nothing quite to compare with the Australian mound-builders, for example, whose habitation is built up of earth and stones, 14 feet high and 150 feet in circumference; nor of the African sociable grosbeak, whose nest—or rather aggregation of nests—is a huge circular erection surrounding the entire stem of a great tree, and containing as many as 300 nest-cells, each occupied by a pair of birds; nor have we an esculent swallow as the Chinese have, whose glutinous secretions are worked into an edible nest with a market value of 45 dollars a pound.

But apart from these abnormal examples of avian craftsmanship, our nest-builders, none the less, show a variety of design and skill in dealing with local difficulties which are truly marvellous when the weakness of the workers and the inadequacy of their tools come to be considered.



CHAFFINCH AND NEST.

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The tunnel of the sand-martin, for instance, driven for two feet or more into the hard bank, or the nest of the house-martin, built up of tiny pellets, each adhering to the one below, the whole swelling gracefully outwards and gauged to an inch to meet the overhanging eave—these, when only frail beaks and tiny claws are available, are, without question, remarkable feats of engineering.

It would be interesting to know why certain birds have decided to build nests with a roof when the majority conclude that no cover is necessary. Strangely enough, the birds which lay in the most exposed situations—on rocks and barren moors—the guillemot, razorbill, and curlew, for example—are those which take the least trouble to provide any shelter for their coming families. The wren, wood-wren, willow-wren, long-tailed tit, and others, which are dome-builders, almost invariably select sites which are well protected by trees and under-wood from the inclemency of the weather.

Mud is a material which many birds use in the process of nest construction, some employing it exclusively for the outer structure, whilst others combine it with sticks, straws, etc. The magpie introduces a large quantity of mud into the thorny edifice which it erects in the tree-tops, and the song thrush adopts it, in conjunction with decayed wood, for a lining. The house-martin and the swallow, however, are the true mud-builders. Their method is to collect tiny pellets from the margins of ponds and from road-side puddles, and to build up the nest, brick by brick. The swallow has added an improvement which certainly tends to security. It first selects a short stick or fibre, and this it rolls in the mud. As the ends project the pellets thus formed are “tied in” one with another and thus the nest-walls are held together with

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greater firmness. The house-martin, which builds in situations where strength is more needed, curiously does not appear to avail itself of this simple yet effective device.

It is noteworthy that, needing security and shelter as they do, and often toiling so laboriously to attain these advantages, so few birds comparatively avail themselves of natural recesses where the greater part of the work is done for them. The sensible hole-builders include the wryneck, nut-hatch, puffin, kingfisher, and many others; and it may be noted here that most birds nesting in darkened recesses lay eggs of the purest white. Whether the phenomenon of protective coloration has any bearing on this point remains to be decided. It is clear, however, that if birds which nest in open places, the curlew, ringed plover, or the lapwing, for instance, laid white eggs they would readily be detected.

One of the most remarkable examples of protective colouring in eggs is to be found in those of the Sandwich tern. This bird makes no nest whatever. The eggs are simply dropped upon the bare shingle, without even a depression to keep them together. From a distance the birds are seen clearly sitting, and as we approach the spot they rise quietly. But where are the eggs? Although we search every inch of ground no sign of an egg can be made out. After a prolonged scrutiny a man might be forgiven for leaving the spot quite convinced that the bird had not laid. But we happen to know that the eggs are here, and we remain with our eyes fixed upon the ground. The shingle is perfectly smooth. It is composed of rounded pebbles, mostly white, but variegated with many which are black or of a reddish hue. As we are analysing a given inch we suddenly dis-

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cover that we are looking at an egg. We avert our eye for a moment. When we look again the egg has gone ; nothing remains but the white shingle, diversified by the black and reddish spots. But we know now how we have been deceived, and in a little while the eggs seem to grow all around us, each exactly counterparting the area upon which it rests. Many birds, including the ringed plover, lay on this shingle, and in each case the deception is perfectly contrived.

The use of sticks in nest-building is, of course, common. Such nests vary from the slight platform of the wood pigeon, through which the eggs may be seen, and which often appear too frail to support the sitting bird, to the vast eyrie of the golden eagle—the accumulation of years—which easily bears the weight of a man. The stick-builders, indeed, generally seem to be fond of accumulating material, which they heap upon the old year's nest ; the collection of a pair of jackdaws, for instance, having been known to completely block the stairway of the old castle which they had chosen as a nesting site. The rooks, too, frequently build on to the old homestead in preference to constructing a new domain, and in the older rookeries great platforms are often found which contain several hay-lined hollows, in which the eggs are laid.

Amongst British birds the great crested and the little grebe are essentially the water builders. The coot and the waterhen build nests so close to the water that their nests are often inundated ; but it is reserved to the grebes to build upon rafts which actually float upon the surface.

The statement may still be found in some of the older natural histories that the grebes thrust their legs through the nests when sitting, and so paddle them from place to place. One very ancient

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tradition of a supposed water-builder is that of the kingfisher—the halcyon, which was said to nest on the waves of the sea—the gods vouchsafing perfectly calm weather during nidification ; hence the expression “ halcyon days.”

ORIGINAL BUILDERS.

In selecting a site for a nest most birds appear to follow a more or less fixed rule. Year by year the rooks assemble on the summits of their ancestral elms and the guillemots on the ledges of the sea cliffs. With equal fidelity we find the lapwings returning in the spring to the same rough pastures, the terns to their rocky islets, the landrails to the growing grass, and the woodpeckers to their holes in the decayed trees. Yet instances are constantly occurring which go to prove that even nest-building is in a state of evolution, and that, from time to time, original thinkers arise to set aside conventionality and to make a bold departure from the traditional plan. It is interesting to note that the species which exhibit the greatest tendency to innovation in the direction of nest-building are those most nearly associated with man. The house-sparrow, starling, robin, wren, spotted fly-catcher, blackbird and the two most familiar of the titmice—the great and the blue—and, in a lesser degree, the pied wagtail and the redstart, are all birds of the homestead, and it is to these that one looks for original thinking when the annual question of the selection of a nesting site arises. The house-sparrow is a most daring innovator. There is every reason to believe that the house-sparrow, like the tree-sparrow, was originally a builder in trees exclusively. Now, although still at times piling up a coarse, domed structure of straw in the leafy summits of beech or elm, he will boldly seize upon

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any coign of vantage which offers itself, varying from the hole in the roof to the nest which the little martin has toilfully erected beneath the eaves. In this connection it may be said that the tree-sparrow would appear to be slowly adopting some of its near congener's trouble-saving devices. Although in England it still nests in the hole of some remote tree, in France it appears to have taken on the house-sparrow's habit of frequenting human domiciles and of building in suitable recesses. We have a note of a colony of tree-sparrows that have taken up their residence in a row of cabins in Ireland.

The starling, too, is curiously broad-minded in its choice of a nesting-place. In our younger days we looked for the starling in a hole in a tree or beneath the eaves of a building. Now, it will nest almost anywhere—in the under-sticks of a rook's nest ; in a vertical pipe down which it has to dive head foremost ; in a heap of stones by the roadside. It is probably this quality of adapting itself so readily to new circumstances that its rapid rise in this country is due.

The robin, again, not content with the hackneyed bank or mossy wall in the orchard, appears to be always on the look out to better its condition. As in the case of the spotted flycatcher, its efforts in this direction are often remarkable for their ingenuity rather than for their grasp of the exigencies of the case. Still, the shelf of a bookcase in an empty room, the interior of a broken lamp, the recess of an old hat fixed in the garden for a scarecrow, the pocket of a disused coat hanging in the outhouse—all these selections mark the spirit of the pioneer.

In the wagtail family it is in the pied alone—the species which may be fairly said to be most clearly closely in touch with humanity—that the

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desire to experiment becomes apparent. The yellow and the grey cling with little or no deviation to the localities chosen by their remote ancestry. The pied wagtail, on the other hand, makes definite attempts to discover an altogether new nesting site, and then adapts itself to new conditions with a zeal worthy of greater success than is usually attained. It might well be thought that our railways with their constant noise and disturbances would be instinctively shunned by all peace-loving birds. What then shall be said of the pied wagtails, which built their nests on a ledge beneath a railway wagon in a siding near Crewe, and when the wagon subsequently made long journeys to different parts of the kingdom still faithfully attended their charge and eventually reared their brood? Or, again, of the blackbirds which nested between the points on the North Eastern line near Filey, and continued to sit bravely notwithstanding the thundering trains overhead? Or of the oyster-catchers that scooped a hollow on the railway track near Blair Atholl and reared their young notwithstanding the constant traffic?

Many examples are recorded of birds departing from the normal choice of a nesting site. We have instances of herons and rooks nesting on the ground. Mr. Sydney Smith recorded a case of a greenfinch nesting in the grass of an open field. Mr. Riley Fortune gave a photograph of a dipper's nest in a tree, and both pheasants, waterhens, and domestic fowls have been found nesting at a considerable height from the earth.

The habits of certain birds-of-prey, especially the buzzard, of bringing freshly-torn branches with green leaves to the nest as though to afford shade to the nestlings, has also been noticed. In relation to the sparrow-hawk Mr. J. H. Owen wrote in

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“ British Birds ” : “ This bird also brought fresh leaves to the nest occasionally and dropped them in the cup of the nest. The curious thing was that she always brought elm leaves, and there was no elm tree within a hundred yards, the nest being in an oakwood and actually built in an oak. Young ash, poplar, lime and horn-beam lay between the nearest elm. The wood is more than 60 acres in extent, and I do not think there are half a dozen elms in it. The selection of elm leaves is the more curious as the hawk usually builds the greater part of the nest of the same wood as the tree in which the nest is placed.”

At times birds will use substances in nest-building not generally adopted by their kind, mainly, it may be, because a supply of the material chances to be at hand. We remember a brambling's nest in Norway largely composed of chips made by the wood-cutters working close at hand and Mr. Jasper Atkinson describes a willow-wren's nest built in the midst of a hen-run, when the birds had woven in so many feathers of the poultry as to render it practically invisible.

SWALLOW'S CHANGE OF HABIT.

The swallow appears to be a bird that has changed its habit of nesting. It is clear that in Gilbert White's day—namely about 1770—the chimney-stack was the usual situation of the swallow's nest, and that from this habit the familiar name chimney-swallow was derived.

White is circumstantial in his account comparing the custom of the swallow in Great Britain with its congeners in other countries. In Sweden, he writes, she builds in barns and is called the “ Cada Swala ” the barn-swallow.

He writes further “ Here and there a bird may affect some odd peculiar place, as we have known a

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swallow build down the shaft of an old well, but in general with us this *hirundo* breeds in chimneys and loves to haunt those stacks where there is a constant fire, no doubt for the sake of warmth, not that it can subsist in the immediate shaft where there is a fire, but prefers one adjoining to that of the kitchen and disregards the perpetual smoke of that funnel, as I have often observed with some degree of wonder. Five or six, or more feet down the chimney does the little bird begin to form her nest. Wonderful is the address which it shows all day long in ascending and descending with security through so narrow a pass. When hovering over the mouth of the funnel the vibration of the wings acting on the confined air occasions a rumbling like thunder."

It certainly cannot be said that the chimney is the normal site of the swallow to-day. Personally we have never seen an instance, though of course they may still exist.

Mr. A. H. Patterson, in "Notes of an East Coast Naturalist" published in 1904 writes: "For some years there has been noticed here, as in many other localities, a steady falling off in the number of swallows frequenting Great Yarmouth, certain old chimneys peopled by successive generations even having been deserted.

The facts seem to point to the slow and gradual discontinuance of an ancestral habit, and it is quite possible in the coming time, the present decade may be pointed to as the period when this ancient custom finally disappeared.

DECORATIVE SENSE IN BIRDS

Is it true that animals, especially birds, have a sense of artistic value, and that when they build their homes they are moved, not alone by the idea

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of utility, but by decorative motives as well? This suggestion is generally scoffed at by naturalists of the sterner sort, but when one considers the delicately-woven nest of the chaffinch or goldcrest, where the vari-coloured mosses and lichen appear to be arranged in prettily chosen patterns, it is hard to avoid the conclusion that a definite decorative sense has been brought into play.

In 1915, the Rev. S. Cornish Watkins found the nest of a mistle-thrush in a pear tree just outside Staunton-in-Arrow churchyard, that was adorned with artificial flowers taken from a wreath on a grave. He stated in the *Selbourne Magazine* that the wires were interwoven with the fabric of the nest in a manner that satisfied him they had been introduced during the actual process of construction. In a succeeding year the birds returned and again appropriated flowers for the nest.

In the case of the long-tailed field-mouse, too, something of the same quality may be seen. One of these little creatures that we had in confinement built a rounded nest of moss like an inverted cup. The moss supplied gave little scope for artistic arrangement, but directly pieces of red wool and variously coloured scraps of paper were added they were at once woven into the outer surface of the nest in a fashion that certainly suggested the idea of intentional ornamentation.

But the most striking instance in animated nature of creatures deliberately seeking to beautify their homes by adding brightly coloured objects that are obviously of no practical utility is afforded by the various species of bower-bird.

Quite apart from their actual nests, these birds build bowers and arbours that are veritable pleasure grounds, and the spaces in and around these are strewn with various incongruous objects that have

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every appearance of being carefully selected with the single purpose of adornment. The satin bower-bird is catholic in its taste, and uses bones, feathers, shells, and pebbles without much discrimination ; the spotted on the other hand is said to specialise largely in bones, but also has a distinct liking for bits of bright metal, and has been known to invade houses in search of them.

Newton's bower-bird of Queensland, has a pretty taste in flowers for decorations, which are replaced as they become faded, and the gardener-bird, of New Guinea, that builds a curious conical hut round the stem of a sapling, varies its colour scheme of buds and blossoms by the introduction of gaudy insects. The disposition of another of the allied species tends in a sombre direction : its ornaments consisting entirely of dark objects, mainly black beetles.

It will be remembered that our crow family—related to the bower-birds—have the habit of collecting odd trifles, especially of bright metal, but these they merely stow out of sight in miserly fashion. Mr. F. Finn suggests that this seemingly senseless habit may be the starved remainder of an instinct for collecting and displaying bric-a-brac, once possessed by their primitive ancestors.



GREAT CRESTED GREBE'S NEST AND EGGS

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BIRDS' EGGS

CHAPTER III

PAINTING OF THE EGG. DIVERSITY IN SHAPE. MUSIC OF THE MOON. SIZE OF EGGS IN RELATION TO THAT OF PARENTS. ERYTHRISM IN EGGS.

The ancient Eastern occultists in endeavouring to develop their psychic powers—powers which they held to be latent in every human spirit—placed before themselves a seed as an object of prolonged contemplation. They first learned every line, dint and mark, on the outward contour; then, we are told, their spirit slowly blended with the living spirit in the seed until they came to see clairvoyantly the forces at work which build up the green, rounded stem, shape the various leaves, and finally, deck the flower in all its lovely and delicately arranged hues.

In the practical West, where time is money, we are hardly likely to devote the months or years necessary for this kind of development, even if we are willing to admit, in the words of the man-in-the street, that “there may be something in it;” but it is open for all to take a seed or an egg, and by holding the mind firmly upon it, to learn something of what it has to tell on its simple, material side.

In the first place, look at the varied colours of eggs—the golden eagle’s or the sparrow-hawk’s, with their bold, irregular blotches, the tit’s, with their delicate round red spots, the oyster-catcher’s or yellow-hammer’s, with their remarkable tracery

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of inter-mingled lines. How have these manifold markings been brought about? The reply is not altogether clear even in the present day. That there existed some pigment within the birds' organisation was obvious at once, and this was crudely ascribed to secretions of blood and bile, but what the nature of this colouring matter might be and how it came to be laid on in the manner we see, these questions were left for long undecided. Much of our present knowledge is derived from the researches of the late Professor Sorby. By means of spectrum-analysis he discovered seven well-marked substances in the colouring matter of eggs which he distinguished by seven formidable names. One of these is a peculiar red-brown, another a fine blue, and so on.

In regard to what may be described as the painting of the egg, Professor Newton writes :—

“ In the progress of the egg through that part of the oviduct, in which the pigment is laid on, many of them become smeared, blotched, or protracted in some particular direction. The circular spots thus betoken the deposition of the colouring matter while the egg is at rest, the blurred markings show its deposition while the egg is in motion, and this motion would seem often to be at once onward and rotatory, as indicated by the spiral markings not uncommonly observable in the eggs of some birds of prey and others.”

Newton further remarks that this colouring matter appears to be less profuse in young birds, growing richer and more abundant as the bird attains full vigour and declining again with age. He illustrates this by a series of golden eagles' eggs in his own collection, laid by the same bird during a period of twelve years, which show all the gradations described.

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All collectors must have been struck by the diversity in the shape of eggs, ranging from the almost globular form (no egg is perfectly round) of the owls and kingfishers to the pear-shaped formations of the snipe and plover. Many speculations have arisen on this point. Pear-shaped eggs are usually found, four in a nest—and are normally arranged with the points inwards, forming a compact circle which the bird can conveniently cover. The non-rolling quality of the guillemot's egg, adapting it to narrow ledges, has often been pointed out. Then, again, it has been suggested that the shape of the egg bears a relation to the form of the bird to be produced—that long-legged and long-billed birds come from pear-shaped eggs—snipe and plovers—and round-headed birds—owls, for example, from round eggs. This principle, for what it may be worth, however, does not work out in the case of the kingfisher and many other species. Again, has the colouring of an egg any relation to the plumage or other qualities possessed by the parents? Many resemblances may, of course, be traced; the blacks and olive-browns of some of the waders, the rich, red-browns of the grouse, seem to be repeated to some extent on the eggs. But the exceptions here are too numerous for any rule to be laid down. Still, looked at merely as a theme for speculation, many interesting considerations arise on this point. Before the embryo shows any sign of development, it is clear that every egg contains, as a latent principle, every characteristic feature—shape, habits, sex, plumage of the bird soon to be developed. When Tennyson said that :—

The music of the moon
Is hidden in the plain eggs of the nightingale,

he used no mere figure of speech; he stated an actual fact in science. Now we reach a singular

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coincidence—if, indeed, it be merely a coincidence. The eggs of all the great singers, with few exceptions (the song-thrush, for example) bear a strong resemblance to each other in colour. In the nightingale, skylark, blackcap, garden-warbler, and many others the same olive brown hue is repeated in lighter or darker tones. It may also be noted that no bird in our country which may be fairly classed as a songster is produced from a white egg. Ducks and geese, owls, wood-peckers, pigeons, swifts, martins, kingfishers, wrynecks, in all these the notes are either harsh or inconspicuous. Thus, it will be seen that, although no definite theory can be based on these facts, it would be rash to say that no relation whatever exists between the coming chick and the egg-shell in which it is enclosed.

Another interesting fact that was remarked upon by Hewitson as long ago as 1838, is that nearly all birds which breed in holes, or in other places from which light is excluded, lay uniformly white eggs. This has given rise to many ingenious theories. One hypothesis set forth by Dr. M'Aldowie is that all eggs were originally coloured; that the pigments, unstable and variable, were intended to assist in concealment and in protection from solar rays, and that as the ages went by, in the case of eggs laid in caves, holes, and other gloomy recesses, these safeguards were useless, and so the colouring disappeared. Newton, however, points out one fatal objection to these and kindred speculations. He shows that all these hypotheses are based on a study of the eggs of British birds only, and he remarks that as the most instructive forms of each class do not belong to our own limited fauna, allowance must be made for the imperfect information whence the results are drawn. Still we think the fact remains that if the white, conspicuous eggs

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now only found in deep seclusion, were laid in the open after the manner of the lapwing's, curlew's, or golden plover's, the destruction of the species would speedily follow, and we may therefore conclude that some protective agency has been at work.

The size of eggs in relation to that of the parent has also furnished a theme for the consideration of the curious. Here the most striking irregularities occur. The guillemot and the raven are themselves of about equal size ; their eggs vary as ten to one. There is a vast difference in the relative sizes of the snipe and partridge ; their eggs are approximately of equal bulk. Hewitson long ago wrote :—

“ The reason of this great disparity is, however, obvious ; the eggs of all those birds which quit the nest soon after they are hatched, and are consequently more fully developed at their birth, are very large.”

How so distinguished an ornithologist with the facts before him could have reached so untrue a conclusion it is difficult to say. In some of the most obvious cases of disparity, take those of the pheasant and the partridge on the one hand, and of the guillemot on the other ; the young of the two former come forth plumed and ready at once for the battle of life ; in the latter the chick rests for weeks, a mere callow nestling, on the ledge of the rocks. Yet the guillemot's egg is many times larger than that of the pheasant.

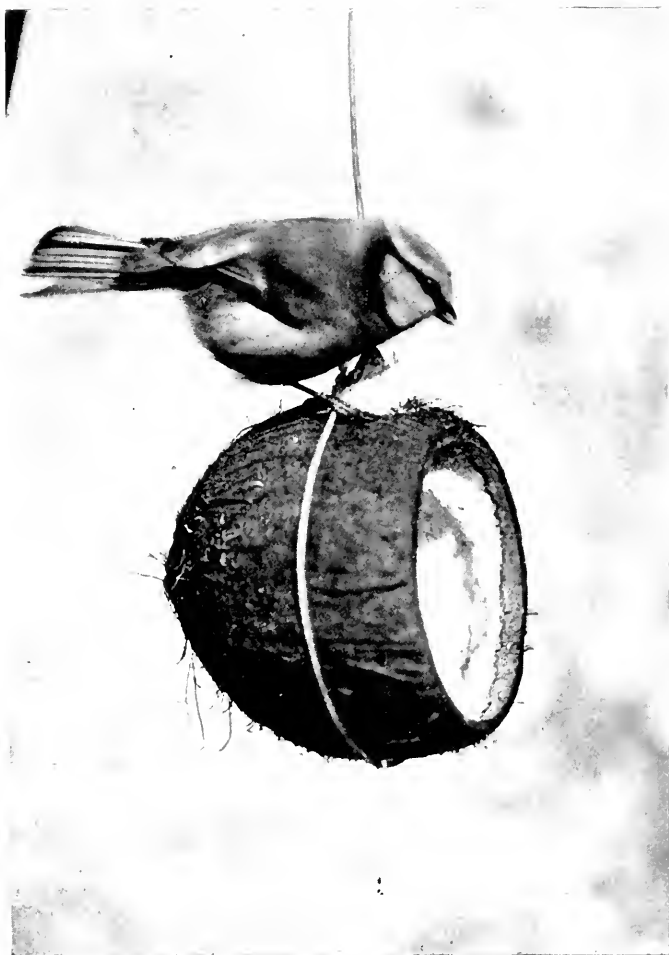
A curious departure from type is sometimes shown in certain eggs. The eggs of the guillemot, tree-pipit and the cuckoo, for example, are remarkable for their wide range of colouring, the difference in given specimens being often so extreme that they might well be taken to represent different species. The tendency to redness in eggs

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that are normally green or blue, is denoted by the term erythrism. In some species the red eggs are so numerous that they constitute a type: in others they exist but are of extremely rare occurrence.

In the tree-pipit and red-backed-shrike the tendency to lay "red eggs" is marked: in the sedge-warbler, common tern, guillemot and lapwing it occurs less frequently, and instances are recorded in the case of the raven, hooded crow, rook and magpie. The Rev. F. C. R. Jourdain has stated that in the Cape rook, the red type is found to the exclusion of the blue usually associated with the race.

Among the many departures from type that are recorded are the eggs of house-martins, hedge sparrows, and starlings, freckled more or less thickly with red spots.



BLUE TITMOUSE

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MOVEMENT IN BIRDS

CHAPTER IV

HOW BIRDS FLY AND WALK. MOVEMENTS PECULIAR TO PAIRING SEASON. EVOLUTION OF MOVEMENT. MOVEMENTS OF BIRDS UNDER WATER. SUB-AQUATIC MOVEMENTS OF DIPPER. BIRDS AS HUNTERS. STARLINGS AS FLY-CATCHERS. BIRDS AS ANGLERS. DIFFERENT METHODS. GANNETS, AUKS, SKUAS, HERONS, KINGFISHERS. GULLS DROPPING MUSSELS FROM A HEIGHT.

No form of life can compare with birds in the matter of variety of movement. It is hardly too much to say that every species, certainly every genus, has a manner peculiar to itself. Gilbert White has the following observations hereupon :—

“ Kites and buzzards sail round in circles with wings expanded and motionless. Kestrels have a mode of hanging in the air in one place. Hen harriers fly low over heaths and fields of corn, and beat the ground regularly like a pointer or setter. Owls move in a buoyant manner, as if lighter than air ; they seem to lack ballast. Ravens strike and cuff each other on the wing, and frequently when flying turn on their backs, and appear to be falling to the ground. Rooks often dive and tumble in a frolicsome manner. Woodpeckers fly opening and closing the wings at every stroke, and so are always rising and falling in curves. All the Gallinæ

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fly with an impetuous whirring, and in a straight line. Magpies and jays flutter with powerless wing, and make little dispatch ; herons seem encumbered with too much sail for their light bodies, but their vast hollow wings are necessary for carrying burdens such as large fishes and the like ; pigeons, and particularly the kind called smiters, have a way of clashing their wings, the one against the other, over their backs with a loud snap ; tumblers turn themselves over in the air. Kingfishers dart straight along like arrows ; fern-owls glance over the tops of the trees at dusk like meteors ; starlings as it were, swim along, while mistle-thrushes have a wild and desultory flight ; swallows sweep over the surface of the ground and water, and distinguish themselves by rapid and quick evolutions ; swifts dash round in circles ; the sand-martin and jack snipe move with frequent vacillations like a butterfly. Whitethroats use odd jerks and gesticulations over the tops of hedges and bushes. Dabchicks, moorhens, and coots fly erect, with legs hanging down, and hardly make any dispatch. (Gulls, it may also be said, descend from the upper air to snatch their prey from the surface of the water. Terns and Solan geese drop into the sea, and disappear like falling stones). Geese, cranes, and most wild fowl move in figured flights, often changing their position. Skylarks rise and fall perpendicularly in the air ; woodlarks hang poised ; titlarks rise and fall in large curves, singing in their descent."

Here it may be noted that White probably referred to the tree-pipit. Somewhat curiously for so close an observer, he uses the word titlark to designate the tree-pipit and meadow-pipit indiscriminately. It is true of the tree-pipit that it rises and falls in large curves, singing in its descent.

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The ascent of the meadow-pipit is a somewhat sorry exhibition of soaring by comparison. It rises in hesitating fashion, uttering its twittering notes the while, and soon falls back to rock or herbage as though surprised at its own audacity. The tree-pipit makes a bolder and more sustained effort, but both sink into insignificance before the true sky-bird, which boldly cuts itself adrift from a material world and abandons itself altogether to a higher environment.

Many birds, again, have movements peculiar to the pairing season, which are seen at no other time. Ringdoves hang on the wing in a toying and playful fashion ; the snipe fans the air like a windhover, and it is usually during the time of incubation that it drops abruptly through the air on oblique wing, bringing about the curious sound known as bleating ; the greenfinch exhibits languishing and faltering gestures as to appear like a wounded or dying bird. Pigeons inflate their crops and walk in circles, a manner of wooing which is followed in some degree by the long-eared owls. Blackcock perform extraordinary antics, and even the stolid rook indulges in grotesque nods, bows, and caws, jerking its tail feathers apart with a rattling sound.

In their movements on foot birds show marked peculiarities. All the Gallinæ parade and walk gracefully, and run nimbly. Parrots, crossbills and the like walk awkwardly, and make use of the bill as a third foot. Most of the smaller birds hop, the wagtails and pipits being the least of the feathered race that adopt the expedient of putting one foot before the other. All the duck tribe waddle ; divers and auks stand nearly erect, and move as if fettered by hobble skirts. Guillemots and puffins literally fly under water ; cormorants

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are propelled by the backward sweep of the webbed feet alone. The storm petrel, the smallest of web-footed birds, said to derive its name from the Apostle Peter, runs up and down the billows of the Atlantic as nimbly as the ringed dotterel trips over its native sand-dunes. Most birds that seek their living in water are web-footed, but sandpipers, pheasants, and other non-web-footed birds swim well on occasion.

When one watches the infinite variety in the movements of birds, and how readily their forms respond to the eager impulses from within, it is not difficult to see how, as circumstances and environment change through the ages, new impulses may arise, and in turn create new movements. For example, the dipper has long been regarded as something of an anomaly in bird life. It would appear that this member of the strictly terrestrial thrush family took on a habit in the dim past of searching for food on the margins and partly submerged stones of rivers. Deeper and deeper it thrust its head into the water seeking for aquatic beetles, and other insects. At length it came to disappear altogether, and became a diver. Still it has not acquired even yet any of the characteristics of the true diving birds. It is still a thrush. "The acutest observer,"—said Darwin, "by examining the dead body of a dipper would never have suspected its sub-aquatic habits." Its feet are unwebbed, without even the slight fringing membrane of the grebes and coots. Its way of going under water, too, resembles more nearly that of a thrush taking a header than the manner of a true diving fowl sliding into its native element."

In many ways the evolution of movement may be inferred by noting the manners of certain birds. Any one who watches the turns and twists of a

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raven as it gambols in the air may see the first natural departure from a normal line of flight which, if developed, might in time become definite "tumbling" as seen in the pigeon. The tendency to eccentricity when on the wing would probably be found to belong to one particular bird. If a like peculiarity were noted later in another of the same species and the two were paired, a race might be founded differing in mode of flight from the original stock to an extent which in time might point to a new species.

The difficulties of applying any system of artificial selection to wild birds are of course insuperable. But the principle—as Darwin has so conclusively shown—may be seen clearly at work in the case of the pigeon. For the pigeon differs from every other bird in one most important respect. It retains every characteristic and privilege of a true wild bird, yet by reason of its "homing" habit man is able to regulate its pairing instinct and imperceptibly, to surround it by conditions of life which he himself determines. This he has succeeded in doing without impairing its natural sense of freedom, and thus, unlike the domestic fowl or duck, it loses nothing of its wing-power.

To produce a tumbler which will perform a series of even revolutions in mid-air falling many feet in each descent has been the work of ages. But in this case it can be shown beyond doubt that man has had ages to work in. Professor Lepsius has stated that there are definite records of pigeons being kept in the fifth Egyptian dynasty about 3,000 B.C. That pigeon-fancying is no new pastime may be gathered from the statement of Pliny, that in the time of the Romans immense prices were given for high-class birds—"nay,

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they have come to this pass that they can reckon up their pedigree and race."

In many quadrupeds, too, the evolution of movement may be traced. The common rat is not normally aquatic; the presumption is that it shares with other thin-skinned and sensitive creatures of its type a distaste for water as a bathing medium. Yet when the pressure of circumstances forces it to live in a sewer it becomes an expert swimmer and diver.

Perhaps the most striking example of natural movement changed by new conditions is seen in the pointer and setter. Something of a rudimentary "point" may be noted in the fox and other animals which approach their prey by stealth. In the fox it is a mere instinctive pause in order that the exact position of the crouching rabbit may be determined before the fatal pounce is made. In the pointer and setter this pause is prolonged by training; the momentary check is extended indefinitely. To watch a highly-trained dog strike a hot scent is a curious and instructive sight. It is seen to be the subject of two opposing currents of emotion; the one urging it forward to leap upon and tear its prey, the other holding it back as with an iron hand. The raised foot and the spasmodic working of the jaw mark the strong internal conflict.

MOVEMENTS OF BIRDS UNDER WATER.

The movements of different species of birds when pursuing their prey under water are, of necessity, not always easy to trace. Some idea of their relative methods may be gathered from an examination of the structure of the birds themselves.

To take the cormorants first, the black and the green, we note at once that the legs and webbed

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feet are enormously powerful, and well set back on the body. With a singularly graceful curve of head and neck, the cormorant dives without a splash, appearing to slide into the deeps without an effort. Beneath the water it moves with marvellous celerity. It might well be thought that a fish, in its native element, would readily escape from the onslaught of a mere bird. But if, by fortunate chance, a cormorant be seen in the crystal depths of the rock-pool, this belief is dispelled for ever. The long, narrow, black form appears sharpened to the finest point. Propelled only by the backward sweep of the webbed feet, turning like lightning to right and left, around the angle of the rocks or about the weeds, the black water-wolf pursues its quivering prey. In point of speed, the swiftest fish appears to be hopelessly outmatched. In a few seconds, the relentless bill overtakes it, and it instantly disappears.

The divers (*Colymbidæ*) constitute a small family of four species and one sub-species. Three of these—the great northern, the red-throated, and black-throated divers—are British. An examination of the structural peculiarities of these birds shows them to be wonderfully adapted for sub-aquatic movement. Divers they are essentially, every line of their graceful yet powerful forms being drawn with the view of swift progression beneath the water. The legs set far back, are broad, yet perfectly flat, and when the webbed feet are drawn up preparatory to the stroke, the narrow edge alone of leg and foot is opposed to the element. As the foot descends these broad surfaces are brought to bear upon the water, and the bird shoots forward like an arrow driven from a bow.

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The British auk family includes the little auk, the guillemots, common and black, the puffin, and the razorbill. These birds are built on different lines from the true divers. Their feet are small and comparatively feeble. But, to counter-balance this, the wings are set well forward, and beneath the water act like the flippers of a seal. Thus these birds may be seen to be literally flying under water, the beating of the wings having more to do with the propulsion than the strokes of the webbed feet. The auk's manner of diving differs from that of both cormorant and diver. In place of the graceful curve of the one, and the almost magical disappearance of the other, the guillemot, or razorbill, dips its head deep in the water, and then with a quick little flick of wing and twist of body, drives itself down to the lower levels. A stream of bubbles rises in its wake, and it either bolts the fish it catches as it flies beneath the water, or rises to the surface to discuss it at its leisure. The auks remain submerged for a much shorter time than either the cormorants or the divers. Twenty-three seconds has been given as an average, but many birds which we recently timed were not longer than fifteen.

The waterhen cannot be regarded as one of the true diving birds, inasmuch as it appears to go under the water rather for the purpose of concealment than in the regular pursuit of food. It will remain hidden in sedges or overhanging vegetation with merely its bill projecting from the surface. When swimming under water it uses its wings after the manner of the auks. The grebes, on the other hand, keep the wings tightly compressed to the sides, and glide through the water like fishes.

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The sub-aquatic movements of the dipper are a matter upon which many diverse views have been expressed. Macgillivray writes :—

“ I have seen it moving under water in situations where I could observe it with certainty, and I readily perceived that its actions were precisely similar to those of the divers, mergansers, and cormorants (with respect, we must differ here, for neither the divers nor cormorants use their wings, and the dipper certainly does), which I have often watched from an eminence as they pursued the shoals of sand-eels along the sandy shores of the Hebrides. It, in fact, flew—not merely using the wing from the carpal joint but extending it considerably and employing its whole extent, just as if moving in the air. The general direction of the body in these circumstances is obliquely downwards, and great force is evidently used to counteract the effect of gravity, the bird finding it difficult to keep itself at the bottom.”

Montagu writes :—

“ The assertion of the dipper walking below the water which some persons have ventured is not made good by observation nor countenanced by reason. The dipper is by no means a walking bird ; even on land I have never seen it move more than a few steps, which is accomplished by a kind of leaping motion. Its short legs and long curved claws are very ill-adapted for running, but admirably calculated for securing a steady footing on slippery stones, whether above or beneath the surface of the water.”

Opportunities of observing the dipper to full advantage, as it moves on the bed of a stream, are of rare occurrence. Such an occasion presented itself on the River Garry in Perthshire. For one

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standing on the wooden bridge and looking upstream, the crystal-clear water is spread out in a succession of rippling flats, dotted here and there with isolated boulders and many smaller partly submerged stones. Here, every morning one or more dippers were to be seen. One, in particular, would flit through the arches, and take up its position on a little promontory of shingle directly beneath the bridge. Soon it would indulge in little gambols and evolutions, walking far into the shallow water with its head submerged, until its dark back alone could be seen above the surface. Then, with a quick little run, the back would go under altogether, and the dusky shadow would then be seen continuing its course under water for a yard or so, re-appearing unobtrusively on the opposite bank of pebbles and nodding its head. Certainly it appeared to run on the bed of the stream when completely submerged, exactly as it did when the water was too shallow altogether to conceal it. It appeared to be carried on by its own impetus and at this point no extension of the wings, beyond a slight upward flip, could be observed. A little later it would flit to a large stone a few yards away, when it would enter a little pool bending to wash itself with ruffled feathers as a thrush might, ever and again giving odd little runs in the water, turning abruptly to right or left, as a duckling does when catching flies, sometimes above water and sometimes below. At the end of each whimsical little gambol it would always turn up most sedately upon some adjacent stone, as though rather ashamed of its escapade.

These evolutions were seen only in the early morning. Once, when startled by a noisy passenger crossing the bridge, the bird flew

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to the side of the river, and, under the shadow of the trees, remained quite motionless for fully ten minutes, a very different figure from the merry little water-sprite which had just been flitting and frisking in the waters beneath the bridge.

In deeper water the dipper unquestionably uses its wings to keep itself down, and even the young may be seen flying beneath the surface.

BIRDS AS HUNTERS.

With all animals as with man the predominant question is how to get a living. Nature appears to have made matter easy for the vegetarians: their life-problem arises only when it comes to getting out of the way of their less fortunately placed neighbours for whom the fruits of the earth are insufficient.

For the strictly carnivorous birds the most constant activity and resource are demanded if they are to keep body and soul together. By the nature of the case they can take little or no thought for to-morrow. They must kill or die.

Hunting is the most primitive form of food-getting, the straight running down of the quarry as seen in the greyhound—on earth and under the earth, in air, river and sea the hunters are always at work. Just as the hound overtakes the hare, the swallow runs down the fly, the hawk the sparrow, the otter the trout, the guillemot the young herring.

Diurnal birds-of-prey, unlike many carnivorous mammals, have little use for strategy; they rely on speed. The golden eagle and the peregrine falcon strike their quarry in the air after a straight run, the sparrow-hawk may grip a finch from a bough or even from the ground, but he too,

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is an aerial hunter. The kestrel, it may be, brings some patient wood-craft into play, but when he hovers aloft, the tiny mouse creeping in the tangled grasses far below leaves him no alternative.

The owls, again, have little need of the cunning of the fox, or the patience of the heron. Nature has formed them on a plan that gives them an immeasurable advantage over their victims. Their eyes are so constructed that they gather in the faintest and fewest rays of light, and the feet and claws are finely formed for the sudden seizure of prey. In the owl we see a carefully perfected and delicately balanced engine of death, framed to survey the intricacies of the herbage in the darkness, to glide swiftly and silently through the air, and to bring down the relentless mechanism of foot and talon upon the quarry. From such a foe there is no safety for even the wariest mouse as it steals along, sheltered as it may believe, in the double security of dense cover and of night.

Although owls move through the air with the buoyancy of thistledown they are birds of extraordinary power. We once placed a pair of tawny owls in an out-house that had become infested with rats and mice. At intervals through the night one could hear the thud of the pouncing birds on the wooden floor and the terror-stricken squeaks of the victims. The birds themselves were probably disconcerted by the contact with a hard surface in place of the grassy hollows where the descent is usually made, but it became clear that their airily-light forms are capable of a most fierce and forcible onslaught.

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The swifts, swallows, and nightjars bear down upon the flying insect, taking it up in their wide bills, without checking their course—the swift especially will arrest the mayfly hundreds of feet below without deviating by a hair's-breadth, from the line of its exquisite curve. The fly-catchers made sudden sallies from a vantage point of branch or railing, bringing back their prey to the perch, there to devour it. It would appear that the fly-catching habit is in a state of evolution. Many birds now, including the robin, chaffinch and sparrow, take up their stations on the sides of a stream when the mayfly is up, and work precisely on the lines which, we believe, were once peculiar to the fly-catcher. Yet they still lack the art of the true fly-catcher: they frequently miss their aim, and flutter awkwardly to correct their course.

It is certain that the starling has adopted new methods within recent times. It may now be seen on a still, sunny day, hawking for flies in mid-air exactly as the swallow does, although of course its aerial movements are wanting in the ease and grace of the true masters of the craft that have a racial experience of hundreds of centuries behind them.

BIRDS AS ANGLERS.

The movements of aquatic birds when seeking food differ in accordance with their conformation and habits.

Some ducks dive: others feed only on the surface. Around the Bass Rock the calm sea may be seen thrashed into foam by the thousands of gannets dropping as though turned into marble, to the deeps below. These become submerged and remain for an appreciable time under water.

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Terns drop in the same direct way, but recover themselves almost instantly. Gulls for the most part snatch their prey from the surface, but cases have been given when they dive. Mr. J. M. Campbell, who lived for many years on the Bass Rock, states that the razorbills and puffins collect supplies in a manner peculiar to themselves.

“ They dive from the surface and each capture is pinched against the roof of the mouth, and held there by the barbed tongue, leaving the mandibles free for the next capture, till the bill is strung from base to tip with the silvery spoil.

“ The straight pointed bill of the guillemot, however, appears to admit of only one fish being carried at a time : consequently each capture unless required for immediate consumption necessitates a journey to the hungry youngster on the nesting ledge. These single fish are always carried lengthways in the bill, the head inside and the tail protruding and are generally several times larger than those carried by the razorbills and puffins.”

It is surprising how easily a guillemot can move in a limited space. We recently placed one in a tank in a greenhouse where its outstretched wings touched either side. Yet it glided without apparent effort round the corners and its cramped quarters caused no diminution of speed.

The skuas make no attempt to catch fish themselves : their habit is to circle round and round gulls and terns and force them to drop their captures. A predatory practice of this kind has been noted by a correspondent in the “ Scotsman ” in regard to the black-headed gull.

He states that he saw a number of these birds hovering round the place where a party of scoters

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were fishing. When one of the ducks rose to the surface with a fish in its bill, the gulls descended upon it and forced it to give up its prey. Although not strictly angling, the habit of gulls and crows of ascending in the air and dropping mussels from a height to the rocks beneath with the deliberate intention of breaking the otherwise impenetrable shells, may be touched upon here.

Superintendent Jenkins, of the Lancashire and Western Sea Fisheries Committee, recently stated that he saw certain gulls of the walls of the Ribble estuary, collecting mussels on the walls. If the shell broke the gulls at once descended and devoured the mollusc, but if the wind carried the mussel over into the water they made no attempt to follow.

Roughly the avian anglers may be divided into two classes: the surface fishers, and those which follow their prey in their native deeps. The heron is a typical fisher of the first school, he exhibits the patience of the true Waltonian, employing craft rather than violence, and striking only when his quarry comes voluntarily within reach of his bill.

The method of the kingfisher is not altogether dissimilar. He too, watches quietly from an elevated vantage point, and using the whole of his short body as a missile, hurls it down upon the unsuspecting fish beneath.

On some rare occasions a kingfisher may be seen resting on the shingle at the river-side, striking at minnows when they come to the edge.

ALTITUDE AND SPEED OF FLIGHT

CHAPTER V

THE CONDOR. GATKE'S VIEWS. EVIDENCE OF ASTRONOMERS. COLONEL MEINERTZHAGEN'S OPINIONS. RELATIVE RATES OF SPEED. DISCREDITED ESTIMATES. NOTES BY PROFESSOR NEWTON AND MR. TEGETMEIER. DR. EAGLE CLARKE'S DICTUM. COLONEL MEINERTZHAGEN'S ESTIMATE MADE BY MEANS OF THEODOLITES, WITH A TABLE OF VELOCITIES OF NORMAL MIGRATORY FLIGHT.

On the question of height, there is little doubt that certain of the larger soaring birds attain to elevations which appear to be well-nigh incredible. The condor is believed to be the species which mounts highest in the atmosphere. Humbolt described the flight of this bird in the Andes to be at least 20,000 feet above the level of the sea. From the cave of Antisana, elevated 12,958 feet above the level of the Pacific Ocean, he states that he saw the condor soaring at a perpendicular height of 6,876 feet. He notes as a remarkable fact that this bird, which continues to fly in regions where the air is so rarified, descends all at once to the edge of the sea, and thus, in a very brief time, passes through all the variations of climate. At a height of 20,000 feet, he remarks, the air-cells of the condor, which are filled in the lowest regions, must be inflated in an extraordinary manner.



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The late Herr Gatke, the venerable bird-watcher of Heligoland, had many remarks to offer on this question. His conviction was that birds on migration travel normally at far greater heights than was usually supposed. He believed that the flocks which come within our ken, skimming the surface of the sea, and striking against our lighthouses, vast as they may be, were none the less merely the contingents which had been checked in their course, and that their travel must be regarded as more or less unsuccessful and abortive attempts at migration, the more fortunate voyagers taking a line at a far greater elevation.

Corroboration of this view is furnished by Mr. F. M. Chapman, the ornithologist at the American Museum, New York. He states that in New Jersey, on the 3rd of September, 1887, when making certain observations, he carefully noted 262 birds crossing the moon's face. Of these 233 were computed to be at a height of from 1,500 to 15,000 feet. The remarkable thing in this case was that the lowest birds were seen to be "flying upward," as if they had risen from the immediate neighbourhood, and "were seeking the proper elevation at which to continue their flight." Mr. W. E. D. Scott has recorded that on the night of the 19th October, 1880, he saw through an astronomical telescope at Princeton, great numbers of birds passing across the face of the moon. Computations showed that these migrants, among which were recognised warblers, finches, woodpeckers, and blackbirds, were travelling at heights varying from one to two miles. A second astronomer, Mr. J. Tennant, has stated that he has seen birds, apparently kites, frequently pass over the sun's face, some of which were in focus with the sun

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itself, and must, therefore, have been several miles high, while the nearest must have been quite a mile above the earth's surface.

Gatke's belief that the height of normal migration is at least 20,000 feet has not been found to hold good. It has been estimated by the most competent observers that wagtails fly about 150 feet from the sea, swallows between 40 and 100 ft. and meadow pipits as low as 20 feet, whilst sandpipers, plovers, ducks and other high-flying birds rarely exceed 8,000 feet.

In order to secure further data Col. Meinertzhagen advertised in the "Times," requesting pilots in the Royal Air Force who have special means of registering elevation to provide him with their estimates. One of the replies was as follows:—

"On April 1st., I was surprised to meet 40 cock ostriches at 17,000 feet. I attacked them at once and broke up their formation. One nosedived on to the General's tent, whilst another crashed into our cook-house."

But apart from the inevitable humorist many useful details were supplied by saner correspondents. Rooks were noted at 11,000 ft; ducks at 7,500, lapwings at 6,500, golden plover at 6,000, and geese at 700. Although it does not strictly fall within this section, the question as to how far sight assists in finding a true course, may be touched upon here.

It has been stated on an authority that we have unfortunately not been able to verify that birds have an acuity of vision 100 times greater than that of human beings. This, by the way, would account for the marvellous power birds like the swift exhibit of distinguishing tiny insects on the water hundreds of feet beneath them.

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But mere keenness of vision fails to account for the facts of migration, although, of course, it plays a more or less important part in the matter of way-finding.

As Col. Meinertzhagen remarks: "How can sight guide birds on night journeys, when on dark nights birds fly but a few feet above the surface of the earth or sea?"

Amongst the main conclusions reached by him are the following:—Birds need not, for the purpose of migration ascend much beyond 5,000 feet above the level of the earth, nor indeed do they. Birds met with above this level are the exceptions and not the rule. In normal conditions, different species travel at different altitudes, some very low and some invariably high, but during abnormal weather-storm and fog all birds are apt to fly low. The oft-voiced belief that greater altitude makes flight easier for a bird is not borne out by fact. The experience of the Royal Air Force is that as altitude increases the machine has greater difficulty in maintaining height and speed. There is no reason to think that this does not apply equally to birds. The velocity and direction of wind have little effect on altitude.

SPEED.

In regard to the relative rates of speed at which birds travel great differences of opinion have existed. In Gatke's estimate the speed attained is far greater than subsequent authorities are prepared to admit. Gatke believed that a grey crow, travelling across Heligoland, would pass the coast-line of the island at 8 a.m. and arrive on the Lincolnshire coast about 11 a.m., thus covering the 360 miles at the rate of 120 miles per hour. A further estimate satisfied

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him that curlews, godwits, and plovers crossed from Heligoland to certain oyster-beds lying to the eastward, at a known distance of rather more than four English miles in one minute, or at the well-nigh incredible rate of over 240 miles an hour.

Herr Gatke's views appeared to some extent to be sustained by a second observer, Mr. Oswald Crawford, who made certain calculations in regard to the speed of turtle-doves on migration. His conclusions were that, if the flight were continuous, turtle-doves leaving " Kent or Surrey at dawn, might easily be the very birds that a few hours later were skimming over the Portuguese pine-forests on their way to Central Africa."

Against these estimates, which, although made in perfect good faith, must, from the nature of the case, be based on imperfect data we have the carefully reasoned views of the late Professor Newton. Newton found that the speed attributed to the grey crow, for example, 120 miles an hour, was such that, *prima facie*, none of the crow tribe could attain, and that there is no definite evidence that the crows leaving Heligoland at 8 a.m., were the identical birds which arrived in England at 11. Newton continues:—

" If I might cite my own experience (in regard to the general rates of flight), it is to the effect that the swallow does not ordinarily fly so fast as the express train from which one may view it, and a train going at no great speed completely outstrips the partridges which rise in front of it and fly for a few hundred yards alongside of it, as I have observed again and again."

Further, Mr. Tegetmeier has stated that the average speed of homing pigeons in 18 matches is 36 English miles an hour, though in two of

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them a rapidity of about 55 miles was maintained for four hours in succession. This view is largely borne out by an investigation of the figures given week by week in "The Racing Pigeon" and other journals of this character. As a first-class homing Antwerp flies at an unquestionably greater rate than any of the crow family, we can but conclude that Gatke's figures are considerably wide of the mark.

Earlier observations thus may be taken to be more or less guess-work, opinions being derived from the relation of flying birds to trains travelling at express speed and so forth. Again, birds, like all living creatures, have different rates of speed at different times—a sparrow, for instance, endeavouring to escape from a hawk will accelerate its speed far beyond the normal—and it is of course the normal, unhurried rate of progress that one desires to ascertain.

Dr. Eagle Clarke, in his recent work "Studies in Bird Migration," has pointed out that the data on which the estimates were based were of the flimsiest nature and has expressed his belief that no species on migration (when the speed may be taken as normal) exceeds 100 miles an hour and that few reach anything like it, an opinion now fully confirmed.

In the "Ibis" (April, 1921) Colonel Meinertzhagen publishes some estimates of the velocities of flight based on the latest principles of scientific observation. As an expert on the use of anti-aircraft appliances during the war he has been able to bring exact science to bear on the question in a manner that hitherto has been impossible. The observations made near Montreuil in north-east France were by means of theodolites on a 1,420 base with small balloons to ascertain the

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velocity of the wind at the altitude of flight. He found that testing the speed of birds was excellent practice for the men and assures us that the results may be taken as accurate for all practical purposes. He discounts at once Gatke's assertion that birds attain a largely increased velocity by travelling in the more elevated layers of the atmosphere. He shows that greater height tends to lesser speed as the atmosphere is rarer and therefore offers a less suitable mixture on which wings can beat. Birds at a great height, he observes, experience the same difficulty as a man trying to swim in froth.

The following summary, giving the miles per hour travelled by certain birds observed, will make the main facts plain.

Corvidae	31—45
Smaller Passeres	20—37
Geese	42—55
Tame Pigeons	30—36
Starlings	38—49
Falcons	40—48
Ducks	44—59
Sand-grouse	43—47
Waders	34—51
but mostly from	40—51

The figures, which may be termed official, give the swift 68 miles per hour and the swallow, rather curiously only 34—37 $\frac{3}{4}$. The writer asserts that swallows are most deceptive as regards their flight. They are, he says, neither strong nor rapid flyers, and he refuses to place any reliance on the data of the Roubaix swallow which the "Zoologist" recorded as having been released in Paris, and as returning to Roubaix, a distance of 160 miles in 90 minutes, giving a rate of 106 miles per hour. Still, we take it, that although leisurely on migration, the swallow is capable of very much greater speed than the

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figures indicate, and Colonel Meinertzhagen, himself, states that he hesitates even to guess at the rate to which a swift can attain when the necessity arises. " ' This—the fastest of birds,' he remarks, " can increase its ' feeding ' speed of say 70 miles per hour to a velocity that must exceed 100 miles per hour."

It may be added that Colonel Meinertzhagen's observations were made in several countries, including East Africa and Palestine, as well as in France, and we hope that his scientifically derived statistics will do much to put an end to the wild assertions that have been made in regard to the flight of birds—as, for example, that oft-quoted one of Crawford's in " Round the Calendar in Portugal " to the effect that turtle-doves leaving Kent at dawn reach Portugal in a few hours.

MIGRATION

CHAPTER VI

DR. EAGLE CLARKE'S "STUDIES IN BIRD MIGRATION." ANCIENT BELIEFS. THE "HIBERNATION" THEORY. TRANS-MUTATION. WILLUGHBY AND EDWARDS. MODERN VIEWS. FLY LINES. LONG DISTANCE FLIGHTS. WHENCE AND WHITHER? MOTIVES THAT LEAD TO MIGRATION. HOW ARE MIGRANTS GUIDED? MEMORY AND PARENTAL GUIDANCE. MAGNETISM OF THE EARTH. THE ANCIENT WISDOM.

From the earliest recorded days the minds of deep thinkers, poets, and philosophers alike, have been attracted to the subject of migration. Job, Jeremiah, Homer, Anacreon, Aristotle, Pliny, all paused, either to draw from this fact in nature some illustration of the power of the unseen, or to seek scientifically for the conditions of the fact itself.

The problem presented itself in the following forms: Yesterday the land was deserted: to-day the trees are filled with strange singing birds, and the swifts and swallows overspread the sky. Whence do they come? Why do they come? How have they learnt so accurately the right time to arrive? Steering without chart or compass, how do they find their way?

So far as the Scriptural writers are concerned, latter-day science would appear to have little to



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correct. From lighthouse and lightship we must still ask the old question "Doth the hawk fly by Thy wisdom and stretch her wings towards the south?" and we must still make the old affirmation—"Yea, the stork in the heavens knoweth her appointed time, and the turtle and the crane and the swallow observe the time of their coming."

Dr. Eagle Clarke's "Studies in Bird Migration" may be taken as the latest and most exhaustive pronouncement that has been made on this fascinating and baffling subject, and in his opening chapters he states with precision not alone the wide deductions of the seers and poets, but the varied and often contradictory theories of different philosophers, and it is in the nature of the case that his work is mainly concerned with the scientific side of the great mystery. With perfect fairness, and without a touch of the cheap superiority with which many modern scientific writers regard the great fore-runners who worked in the long past and darker times, he records the view of each philosopher in his turn, and enables us to see how "knowledge grows from more to more" as the slow ages roll by. These chapters, we take it, will stand as a clear and impartial account of the thinking and of the evolution of thought on the subject of bird migration for all future time. Strange and varied; some shrewd guesses at the truth, others sufficiently absurd; were the earliest replies given to the questions with which we opened this chapter. As Dr. Eagle Clarke shows, it was reserved to the illustrious Greek, Aristotle (B.C. 384—322), in the eighth book of his "Historia Animalium," to deal for the first time in living history with the migration of birds and other animals as subjects for scientific inquiry. Here it is stated that:—

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“ Some creatures can make provision against change of season, without stirring from their ordinary haunts : some migrate, quitting Pontus and other cold countries after the Autumnal equinox, migrating from warm lands to cool lands to avoid the coming heat. In some cases they migrate from places near at hand : in others they may be said to come from the ends of the world. Pelicans . . . depart in flocks, and the birds in front wait for those in the rear, owing to the fact that when the flock is passing over intervening mountains, the birds in the rear lose sight of their companions in the van . . .

“ Quails when they migrate have no leaders, but when they leave, the glottis flits along with them, as does also the landrail and the eared owl.”

An important statement is made by Aristotle, a statement based plainly on what were taken to be general probabilities but which unfortunately is put forward dogmatically, and as though it were the out-come of direct observation :—

“ A great number of birds go into hiding. . . Swallows have been found in holes : the kite on its first emergence from torpidity has been seen to fly from out some such hiding place. In these cases of ‘ periodic torpor ’ there is no distinction observed, whether the talons of a bird be crooked or straight : for instance, the stork, the ouzel, the turtle-dove, and the lark all go into hiding.”

Thus, as Dr. Eagle Clarke states, Aristotle must be taken to be the originator of the unhappy “ hibernation ” theory—an unfounded dogma which has been put forward by countless subsequent writers as though the phenomenon had been actually seen by them, in place of being a mere parrot-like repetition of a generally-held

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tradition. Other observations made superficially led the great Greek thinker astray, with far reaching results. Many birds changing from their summer to their winter plumage came to resemble one another, and often as one species vanished on migration, another bearing something of its likeness, appeared in its place. On this shadowy foundation Aristotle erected his strange theory of "transmutation." Thus the robin, and the redstart, the garden-warbler and the blackcap, were said to change, the one into the other, and doubtless, the belief that the cuckoo becomes a hawk in winter sprang from the same source.

These grave errors, embodied in a mass of true erudition and logical deduction, wonderful enough in view of the times in which they appeared, were let loose upon the world with most bewildering results. The Roman naturalist Pliny, nearly 400 years later, repeated the fallacies of Aristotle with certain modifications and additions. Thus "the wheatear has its stated day for retirement : at the rising of Sirius it conceals itself, and at the setting of that star comes forth from that retreat : this it does, most singular to relate, exactly on both these days." Further Pliny repeats Aristotle's statements regarding the "transmutations of birds." "With the writing of Pliny"—Dr. Eagle Clarke remarks—"the ancient view of migration comes to an end. The Middle Ages in this, as in many other cases, appear to have been a period of intellectual stagnation, and it was not until the latter half of the sixteenth century that the interest in the subject seems to have revived." In 1555 Olaus Magnus, Archbishop of Upsala, in Sweden, steps forward. With cheerful dogmatism, he states

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as a fact within his own knowledge that "swallows are often drawn out (of the water) in a kind of rolled-up lump, which, when about to descend into the reeds after the beginning of Autumn, have bound themselves together—mouth to mouth, wing to wing, foot to foot." Dr. Eagle Clarke reproduces a picture taken direct from the Archbishop's work, which represents two fishermen standing on the edge of the ice, and drawing towards them a net containing a mixed catch of swallows and fishes. The effect of these unqualified affirmations, for other writers came forward "to reckon themselves among the eye-witnesses of this 'paradoxon' of natural history" may be traced in succeeding literature. Men of the deepest learning and most acute observation, including Linnaeus and Cuvier, fell victims to the idea merely because it was generally received. Later, the strong dogmatic attitude of the Hon. Daines Barrington caused even patient watchers, among whom Gilbert White may be counted the first, to waver and to well-nigh turn aside, although White never gave his own authority to the commonly held belief. It is to the credit of Francis Willughby and George Edwards that they so robustly endeavoured to stem the tide of superstition.

Writing in 1678 Willughby says:—"To us it seems more probable that they (the swallows) fly away into hot countries. . . . than that they lurk in hollow trees and holes in rocks . . . or lie in water under ice in Northern countries."

Nearly a century later Edwards is still more emphatic, although the "immersion" theory had, as yet, lost little of its hold. "It is

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enough," he wrote, "to raise one's indignation to see so many vouchers from so many assertors of this foolish and erroneous conjecture, which is not only repugnant to reason, but to all the known laws of nature."

SOME MODERN VIEWS.

In looking further into this wide question, we may fitly re-state the terms of the problems to be solved. Where do the migrants come from? Whither do they go? What are the motives which lead them, season by season to leave their birth-places, and to undertake arduous and constantly fatal journeys to other lands? And, finally what is the nature of the mysterious power which enables them to steer a true course across unknown seas?

It is evident that the last question is immeasurably the most important and fascinating of the whole, for it leads at once to new realms of thought, and with its solution might come the discovery of a distinctly new sense to be added to the familiar group by which human action is commonly guided and controlled.

In following Dr. Eagle Clarke's tracery of the various lines of speculation on this question, we come clearly to see how eagerly the world's thinkers have at once attacked what may be described as the chief of a set of phenomena, leaving the subsidiary factors undefined, and, in many cases unknown. If we may say so, it will stand permanently to Dr. Eagle Clarke's account that he clearly recognised, on first undertaking his inquiry at the instance of John Cordeaux in 1880, the existence of the vast mass of facts still to be classified, and the mass perhaps greater still as yet awaiting discovery.

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It was to this double task, first, of collecting and arranging systematically the facts already known; and secondly, the discovery of new links which should eventually make the chain complete; that Dr. Eagle Clarke addressed himself, with the result that the labours of 32 years are now embodied in the two volumes, "Studies in Bird Migration." It would be clearly impossible, even in the most cursory fashion, to follow the author as he tracks with infinite patience, bird after bird from its birth-place to the land of its winter sojourn, marking its line of flight, and showing the well-nigh innumerable deviations caused by varying climatic and other conditions. To do this, indeed would be to recapitulate a work, which is already in itself a most concise summary of the information achieved. The utmost, indeed, that space allows, is a setting forth of the more prominent of the conclusions.

In the first place, it is shown that birds when journeying between their more or less widely separated homes, do not, as it is generally supposed, move indiscriminately southwards in the autumn, and in like manner northwards in the spring. Each individual migrant of mature age has its accustomed summer and winter quarters, and follows particular and more or less devious routes to reach them.

There appear, indeed to be highway roads through the air, with certain spots beneath which are known to the main body of travellers as stations for rest and recovery, but there are also innumerable by-ways, which for many reasons, some of which are still obscure, are constantly resorted to.

"The journeys of many" (Dr. Eagle Clarke writes) "are marvellous performances. Some

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of them entail flights across wide stretches of open ocean, as in the case of one beautiful little cuckoo (*Chalcococcyx lucidus*), which summers in New Zealand and Norfolk Island, and winters in Eastern Australia. The distance between New Zealand and Australia direct is about 1,200 miles, and there are no resting places en route. The journey may be accomplished via Norfolk and Lord Howe's Islands by three flights, two of 550 miles and one of 600 miles. Another remarkable feat is that performed by warblers, pipits, shrikes, and sandpipers across the Himalayas, when travelling to and from Siberian and Central Asiatic summer quarters to Indian winter retreats. These birds traverse a belt of absolute desert of more than a hundred miles in width, having an elevation of over 15,000 feet and intersected by numerous snow-capped ridges, the lowest passes of which are, 18,000 feet above sea level."

Many examples are subsequently given of birds which may be said to deviate from the generally accepted track, and to overcome in their own way the obstacles which are incident to the course chosen.

WHENCE AND WHITHER ?

In dealing with what may be described as the "whence and whither" aspect of migration, the choice of stations for the purpose of observation is of the first importance. Hitherto much of our knowledge in regard to the bi-annual movements of British birds has been derived from Heligoland—a point in the ocean where many converging fly-lines may be said to meet and cross. In Fair Island Dr. Eagle Clarke may fairly claim to have discovered a second Heligoland, and his seven

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years' investigations from this station have made it the most famous bird-observatory in our own island group. The records from Fair Island already throw light on many obscure questions, and it is safe to say that a steady crop of new and interesting facts will be gleaned by the bird watchers now appointed to look out from this isolated rock set far in our Northern Seas.

MOTIVES THAT LEAD TO MIGRATION.

That vast numbers leave their summer haunts because the food supply fails is obvious. But what motive leads them to quit their winter quarters just when the conditions of life appear to be growing more favourable day by day? Why, having braved a perilous flight from Norway, and when the temperate shores of England are gained, should the fieldfare and redwing, for an example, face a return journey to a land which would appear to offer them no better provisions than our own? Dr. Eagle Clarke replies:—

“ There are several excellent reasons. Foremost among these is the well-known passionate attachment shown by birds for their native lands—their true home—in which the most fascinating period of their lives is spent. This in itself affords the stimulus to seek, at the appointed time, the hallowed scenes where the all engrossing domestic duties of the year await them, and have for ages been performed.”

“ Why homeward turn thy joyful wing ?
In a far-off land I hear the voice of Spring :
I found myself that moment on the way :
My wings, my wings, they had not power to stay.”

—Montgomery.

In this respect their patriotism, as Dr. Eagle Clarke points out, is curiously constant, the very fields and woods which constitute home for them

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being re-sought. On the obscure point of the origin of the migratory habit Dr. Eagle Clarke finds the views of Russell Wallace and Weismann largely confirmed. This opens out, however, so wide a question, in which the survival of the fittest is involved, that we cannot now enter upon it.

HOW ARE THE MIGRANTS GUIDED ?

In dealing with this question, which he truly describes as one of the greatest mysteries to be found in the animal kingdom, Dr. Eagle Clarke still proceeds on strictly scientific lines. One by one he takes the various theories which have been advanced, and tests each by the facts which he has already ranged in ordered rows.

SIGHT.

The first in order is sight. It has been stated that birds may possess some telescopic power of vision, which goes far beyond anything man knows of seeing. This, coupled with the admitted fact that the main bodies of migrants attain to great heights when travelling, and thus, with continents lying like a map, far below, landmarks might be descried at what would at first appear to be inconceivable distances, is held to account for the true line achieved in steering.

Against this explanation Dr. Eagle Clarke sets the fact that most of the great migratory movements take place at night, and it may be said that, apart from the true nocturnal fowl, there is not the faintest evidence that birds have any specialised organs suited for night-vision : indeed, all experience points to the contrary.

If a finch or warbler, for example, be liberated in a dark room, it will blunder helplessly to the floor, unable to avail itself of the most obvious perch : whereas experiment has shown that a bat

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will avoid threads stretched across the dark area with absolute precision.

But, in order to place the sight theory entirely out of court, Dr. Eagle Clarke cites Sir J. C. Ross in regard to the extensive migrations performed by the flightless penguins. Penguins were observed by him in great abundance going eastwards, proceeding to their far-distant breeding quarters, and Ross writes :—" It is wonderful instinct far beyond the powers of untutored reason, which enables these creatures to find their way, chiefly under water, several hundred miles to their place of usual resort, as each succeeding spring season of the year arrives." On another occasion Ross observed two penguins when more than a thousand miles from the nearest land.

MEMORY AND PARENTAL GUIDANCE

It may be remembered in the " Cat's Pilgrimage " Froude pictured the owl in the hollow tree pondering the problem as to which first came into the world—the owl or the egg. Leaving the initial difficulty, certain writers have assumed that the first bird-parents in some manner acquired a knowledge of the route, and that in each succeeding generation the young birds are piloted across the sea by their progenitors, who thus bring memory and practical experience to bear upon the choice of ways. Here, however, as Dr. Eagle Clarke shows, a strong array of facts bars the way. Numbers of examples are given in which the young birds migrate apart from their parents, and the author holds that this is especially the case with species which are double-brooded, when the first families are early cut adrift and are left to shift for themselves. In further support of this contention Dr. Eagle Clarke gives the instance of the cuckoo :—

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“ It is well known to naturalists ” (he writes) “ that the young cuckoo does not leave our islands, and its summer haunts elsewhere, until some weeks after the adult birds have left for their winter home : hence parental guidance in their case is not conceivable. . . . The parent cuckoo deposits its eggs in the nests of other birds, and the young are reared by foster parents at the expense of their own offspring, which the infant cuckoo soon ejects from the nest. Now, these foster parents mainly belong to species which do not quit our islands, or if so, do not journey far : others certainly do perform considerable migrations. It matters not, however, whether these foster parents are eminently migratory or not, for they do not accompany the emigrant cuckoos on their journey to their winter retreats, which lie in the equatorial regions or to the south of them.”

MAGNETISM OF THE EARTH.

A somewhat ingenious suggestion—a mere suggestion, it may be said, for there has been no reasoned effort to bring it to bear on the general facts of migration—is that birds may be, in some way, susceptible to the magnetism of the earth, and thus when crossing the sea, they are drawn by some principle of gravitation to the nearest land. It has been said that Herbert Spencer’s only conception of a tragedy was the sight of a lovely theory killed by a vicious little fact. Here we have the magnetic theory done to death by one of Dr. Eagle Clarke’s inexorable observations. It is clear that if any principle of magnetism or gravitation existed, as for example, the force which draws pieces of cork scattered on the surface of water, first the smaller to the larger, and eventually the whole to the sides of the vessel,

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this attraction would bring birds at once to the largest and nearest masses of land. But Dr. Eagle Clarke has shown that this is by no means the case. Space does not admit of illustrations, but we may say that the conclusion is firmly reached that birds do not, of necessity, make for the nearest points of land, but are found, even in the darkness and in fog, persistently following particular lines of flight.

Thus, by a process of elimination, modern thought is driven back to the ancient wisdom. Professor Newton's phrase, "Inherited but unconscious experience:" Dr. Eagle Clarke's own words, "Unconscious guidance:" Russell Wallace's statement "that there is 'mind' as an acting cause of all the basic phenomena of life:" all bring us back to the fact that life may be directed in ways to which our own five senses give no clue.'



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CHAPTER VII

MAN'S FIVE SENSES. PROBABILITIES OF ADDITIONAL SENSES IN BIRDS. FAILURE OF THE KNOWN SENSES TO ACCOUNT FOR ACTIONS OF BIRDS AND INSECTS. A WAY-FINDING SENSE. MR. J. H. GURNEY'S VIEWS ON OCCULT SENSES IN BIRDS. FLOCKS OF BIRDS MOVING IN UNISON.

Man is in possession of five senses on which he relies for his impressions of external affairs. Why five? an arbitrary number surely! May there not be other instruments capable of recording vibrations which man has either lost or has never possessed? We know already that our own familiar senses are limited: that notes and colours actually exist that our own ears and eyes are not sensitive enough to take cognizance of. Is it then unreasonable to suggest that birds, beasts and insects may own additional faculties, and by bringing them into play, may be able to perform feats that seem altogether unaccountable to us? If we examine our own senses we find that one may corroborate another in some particular. A blind man may know that an object is round, and sight would confirm this impression. But other senses stand entirely alone. No inkling of sound can reach us through the channel of the eye. The most exquisite touch fails to reveal the fragrance of the rose. Imagine then a sixth sense—any number of additional senses—why chain ourselves down to the purely arbitrary five! We cannot. To

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think of a new sense and of what it might reveal—a sense as distinct from the known five as hearing—let us say—is from seeing is an impossible feat. But if we cannot imagine a sixth sense we can at least picture the condition of mankind if they had been deprived of any one of the familiar five. We will cheat the human race of hearing, for example, leaving this channel open to the lower animals. You, to whom the fact of sound has never been vouchsafed, are out with your dog, and suddenly you see that the animal's attention is arrested. His ears prick, his whole attitude is strained. "That dog sees or smells something," you exclaim. Yet your own eyes survey the long stretch of road that is clearly void. Soon a wagon turns the distant corner. Now you ask yourself, "how came that dull brute thus to peer into the future: to foreknow this coming event?" Then, it may be, you forthwith endow him with an acuity of vision that can look through stone walls, or with powers of scent that can catch odoriferous particles blowing dead against the wind. Yet one additional sense makes the matter clear. The dog merely *heard* the rumbling of the distant wheels.

In dealing with the manner in which certain insects find their mates, and in which vultures discover hidden carcasses at incredible distances, as well as with the facts of migration, we often reason exactly as men would to whom an important sense had been denied. We see wonders enacted before our eyes, and we strain the idea of our own five senses to breaking point in order to account for them.

The oak-eggar moths travelling from the heathery districts where they resort, will cover distances of several miles, and facing adverse winds, will discover females of their own species

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hatched in a chip box in some entomologist's chamber in the heart of a manufacturing town. Nothing that we know of scent will account for this. In this case some light is thrown on the question by the fact that numbers of butterflies have been known to assemble around ships on the coast where low power wireless messages were being dispatched, at once dispersing on their cessation. Thus it may possibly be inferred that they are able to pick up certain vibrations. Again, when some stricken beast falls in the desert, vultures will appear as tiny specks in the sky, and bear down upon their prey. Innumerable instances of this kind could be quoted, but one may suffice. The body of a dog was hidden in a cave and quite invisible from above, yet it was speedily found by a pair of buzzards although none of the birds existed in the neighbourhood for many miles.

In the case of migration all the known senses fail to explain the strange way-finding power shown by birds. All the familiar explanations—parental guidance, powers of vision that enable landmarks to be seen at incredible distances, favouring winds and so on—break down in face of the facts. Young birds are known to migrate before their parents, and penguins travel to a definite destination for hundreds of miles under water.

It is a sign of the times that many naturalists are now abandoning the hard and fast five senses theory in regard to the less obvious movements of what are known as the lower orders of Nature. Writing in the "Ibis" on "The Sense of Smell in Birds" Mr. J. H. Gurney points out that this, even when it exists, cannot be held to explain the manner in which birds find hidden food. He writes:—"There is a novel theory which has been propounded more than once and which, I

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believe is gaining ground. It is that there exists in birds an occult power which may be denominated a food-finding sense, separate from and additional to, the five senses commonly recognised. If the principle of this theory be accepted the necessity for any employment of either scent or sight is almost done away with. . . It is quite reasonable to think that birds may have kept in a most efficient form something which human beings either never had or which is now lost to them. It is undeniable that a food-finding sense exists in many insects (may it not be added—a mate-finding sense in a much more remarkable degree?); this may be taken as established, so why not in birds, or at any rate, in some birds?"

The theory of an additional sense or senses would also account for the extraordinary way in which flocks of birds wheel in perfect unison as though animated by a common spirit. Common action is certainly helped by gregarious habit, but that every individual in a vast gathering should be able to see and appreciate a source of alarm at the same instant, and act with lightning-like swiftness upon it is contrary to what we know of the movements of any large bodies.

We are inclined to believe that the ancient occultists got near to the truth when they spoke of a single spirit permeating the whole—a group-soul, as it were, in action which causes the flock for the time being to move as a single organization, rather than as a mass of individual atoms, each guided by its own will.

What the precise nature of any additional sense may be, it is of course impossible to say, although experiments in telepathy and other occult matters may be of help, but by abandoning the theories of sight, hearing, scent and so on when they can reasonably be shown to be untenable, we may be clearing the ground for newer observation.

PROPERTY IN BIRD LIFE

CHAPTER VIII

SPARROWS AND MOORHENS DEFENDING PROPERTY. ROOKS
AS TREE-OWNERS. MR. ELIOT HOWARD'S "TERRITORY IN
BIRD LIFE."

Many instances may be brought forward to show that certain birds, at any rate, have a distinct sense of the rights of property. These rights are constantly attacked in the jungle just as they are amongst civilised men, but the primary fact is that the marauder usually shows signs of an uneasy conscience, and the defender of the home or other legal possession draws power from the founts of justice that gives him strength to overcome a much larger adversary. "Thrice is he armed who has his quarrel just," is true in bird, even as in human life. With birds, indeed, the idea of protecting their home and especially their young, is so strong that it changes the merest feathered atom into a veritable dragon, ready to defy even the colossal mass of iniquity represented by a boy or a cat.

On one occasion we noted a pair of sparrows in a spout beneath the window, plainly prospecting for a nesting site, or possibly returning to the one occupied the previous year. A stranger came along, sidled along the spout, and began to take a suspicious interest in the pair's domestic arrangements. He was at once attacked with relentless fury. The original owner held him down and tore at him as a hawk might. We interfered at last by opening the window, and separating

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the belligerents. One bird flew away but the invader remained in the spout. When we returned to the window a few moments later the first cock had come back and was again rending his adversary. We drove him off, and his victim at length raised himself wearily to the edge of the spout : then he fell into the garden, where he was instantly pounced upon by his watchful rival, who then administered the coup-de-grace. This is the first time we have seen a duel to the death between sparrows, and as the hen watched the conflict with the utmost complacency, we have reason to think that in this case might coincided with right.

Miss Frances Pitt has given a somewhat similar instance in the case of a pair of moorhens that took possession of a certain area of marshland.

“ All day and every day,” she wrote, “ they kept a keen look-out : at the slightest sign of a stranger their battle cries were heard, the clarion calls ringing over the swamp, and they rushed to the attack. Right is might even on the bog, and they were strong in their indignation. The invaders were in the wrong and they knew it, they were troubled with guilty consciences : they came sneaking down the streamlet, wading along its muddy margins as if fearful of every ripple in the water : they stole guiltily from rush tuft to rush tuft, treading delicately across the moss, and peeping from the shelter of a small alder bush with such a furtive air as plainly told that they knew well they had no business to be there.”

In the fight that followed cock fought with cock and hen with hen and in every case the invaders were defeated.

With rooks it is clear that a given belt of trees is marked out as the property of a particular

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colony. Even when they leave their ancestral home, as they do for months at a time, they never forget the fact of possession, and throughout the whole year they pay periodical visits to their tree-castles in order to satisfy themselves that all is well.

As a rule the movements of the birds in regard to their own rookery are pretty much as follows:— In early May the young are clamorous in the nests, and the black forms of the parents, clearly defined against the green leaves, may be seen from morning to night busily engaged in supplying the ever-increasing needs of their offspring. This is the season of the most abounding activity in the rookery.

In June the young are well on the wing, and are able to visit even distant pastures. They are now learning how to earn their own living, although they still make querulous appeals to their elders for the food which is gradually being withheld. As summer advances the whole colony may suddenly disappear, and in the case of one rookery we have in mind, not a single bird was to be seen until nearly the end of October, when the great family as suddenly returned to remain for two or three days only. During the winter they came back no more in mass, but in early January two or three birds arrived at the trees, held a short consultation and left again. Week by week the visit was repeated, the numbers on each occasion being larger, and in February the full colony were back, and were soon at work at the business of nest-repairing and building.

During the winter several colonies will amalgamate, but the sense of possession is never lost, and at the call of spring each party draws apart, and returns to its own place, the younger members of the community being often forced, by lack of

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accommodation, to betake themselves to a nearby wood, and so, in a double sense, to form a branch colony of their own.

In Mr. Eliot Howard's "Territory in Bird Life," the idea is worked out at considerable length, that most birds map out definite areas that they claim as their own, and that the instinct for separate domains has a wide bearing on the facts of migration, and on the behaviour of the different species as the breeding time draws near.

It is argued that, in the case of immigrants, the male birds often reach this country in advance of the females, just at a time when the sexes might naturally be expected to remain together, and that they do this to peg out their claims to the area they regard as their own. Further, that when the domain has become established, the female is just as ready to defend it as the male is, and that many of the bird-battles to be seen in spring, are not, as is supposed, so much matters of sex rivalry, as of guarding the rights of property.

Although we cannot follow the author in all his inferences, the numerous observations he has made bearing on the matter have a distinct value of their own. There is no doubt that the red-grouse, although this case is not cited, claims a definite tract of heather as its nesting site, driving away all encroachers, a habit becoming more marked as it grows older and more formidable. Thus the moor-keeper is aware he can get a large number of nests in close proximity when the old cocks are killed off by driving.

Again, we can fairly de-limit a robin's domain by putting down a decoy, for if the area has been appropriated, the owner will almost instantly appear to assert his rights. Personally, we always attributed this to the inborn pugnacity of

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a comparatively few species, but we observe that Mr. Howard extends it to the buntings, willow-wren, chiff-chaff, and other peace-loving races.

We have never been impressed by any sense of property in these birds, and, indeed, their nests may often be found a few yards apart. Our belief has always been that a great disparity in the matter of tolerance of neighbours exists in different species even nearly allied. The chaff-finch is always resentful: the linnet and lesser redpole fairly companionable. In our opinion only a comparatively few species claim a definite area as their own.

LANGUAGE OF BIRDS

CHAPTER IX

EXPRESSION OF IDEAS. BIRDS' SONG. SPECIFIC DIFFERENCES IN NOTES. DISTINGUISHING BIRDS BY THEIR NOTE. BIRDS' VOICES AT NIGHT. HUMAN QUALITY IN BIRDS' SONG. MUSICIAN AND BIRD. WHY BIRDS SING. MIMICRY. DIALECT. ABNORMAL SONG.

To what extent birds may be said to possess a definite language is a question which has often been discussed. The first point to be taken is how the word language may be defined. Language is a recognised code of sounds expressing in its earlier stages the strongest and crudest emotions only. As it becomes developed, fainter and less obvious feelings are set forth, until at its highest in the hands of a master it touches the most subtle and evanescent thoughts and fancies of the mind. It is not easy to define the place of music in the scale of language, but it cannot be denied that, inadequate as music may be for the common purposes of life, it is constantly used to express shades and phases of feeling and thought which lie outside the reach of words altogether.

Now, in considering the matter of birds, it becomes clear at once that their code of sound has two at least of the qualities of an organised language ; the stronger and more obvious emotions are expressed with a certainty about which there can be no mistake, and each sound is at once recognised by other members of the species as



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conveying one particular idea. Fear and anger are the two dominant emotions in all wild life. Pure gladness of heart probably comes next ; then come the ideas of love, of welcome, of warning, and of numberless finer feelings, all of which are set forth in a minor key. Something of the evolution of language may be seen when we consider the lower orders of Nature. Fishes are practically dumb ; reptiles express little beyond anger and fear, and these only by a not largely modulated hiss, to which their fellows accord little, if any, sign of recognition. The only animals outside the avian class that may be said to attempt any sort of song are frogs and certain eccentric house-mice. In mammals, the use of sound is comparatively limited, although dogs can set forth plainly anger, fear, pain, and welcome by modifying the intonations of their bark. In birds, on the other hand, we can follow with ease a wide range of ideas expressed with certainty and force. The fierce scream of eagle or hawk, the hissing of geese, the indignant cry of tern or skua gull when their haunts are invaded, all express anger. The sound indicating fear, although often blended with that of anger, may still be clearly distinguished. Let one listen attentively to a horde of sparrows fighting, and he may readily detect the clear ringing note of rage and victory as compared with the weaker and more tremulous twitter of fear and defeat. The note of warning, too, has a peculiar intonation of its own which is plainly known and acknowledged by all the members of the species. The sharp, rapid cries of swallow and martin when a hawk swoops down upon them can bear one interpretation only, "Look out, the enemy is upon us." But all these are expressive of the cruder emotions merely : as in human speech,

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the finer grades of feeling are set forth less obtrusively but none the less clearly. Listen to the hen partridge with her young family about her before the idea of danger has entered her mind. In a series of soft, inward notes she gently prattles to her little ones—a sort of baby-talk known to mothers the world over: now her tone hardens as she chides and recalls a small wanderer who strays too far from the maternal eye. Later, when the covey is broken in the wide turnip field, she remains silent for a time, but directly peace is restored, one hears a restrained, gently reiterated note, differing essentially from the cry of alarm with which she rises calling her circle together again. Compare this note for the re-assembling of the chicks with the one she uses in spring to signal to her mate, and it will be seen that, although the notes are the same, she marks the differences in the circumstances by a change in the intonation. Take the case of the hen grouse, too. In the early morning, usually just about daybreak, a faint metallic cry, utterly un-grouse-like in quality, may be heard from the dark expanses of heather. It is an invitation low and unobtrusive, yet it will awaken a response half-a-league away, and with a loud, masterful *guer-r-r-go-bac go-bac*, the dark form of the cock may be marked as he hurtles against the sky.

In the poultry yards sounds clearly expressive of a variety of ideas may be made out with ease. The crow of the cock has greeting and recognition in it; the loud announcement of the laying hen conveys the suggestion of triumph and rejoicing in which the other birds sympathetically join; the complacent twittering of a chicken in the presence of a fly changes to a note of fear and anger when a wasp is introduced. Parrots are said to repeat human words without any apprecia-

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tion of their meaning, but this is only partly true. A parrot will say "Go away" to a person it dislikes, and its ruffled plumes and menacing bill will emphasise its words. Compare this with the soft, almost pleading intonation "Come to Polly," addressed to a member of the family who stands in favour.

To a great number of the varying sounds in Nature, to the invitation of the grouse, the warning note of the swallow, the indignant cry of tern and lapwing, to name a few examples, words might be fitted without difficulty, when the rudiments of an intelligible language would be seen to exist.

But hitherto we have been dealing with what may be taken to be the common-places of avian speech. It is when we come to the song of birds—to the glorious outburst of the lark, the deep, low, purposeful notes of the nightingale—that a wider question arises. Here are the expressions of an intenser feeling, of a more subtle intuition, it may be, than any words that man has yet devised are capable of conveying. Rest in a meadow at daybreak, when the first sun-shafts lighten a new world of emerald green and cloudless blue. Picture yourself steadily rising, without effort or fear, nearer and nearer to the very gates of gold. Realise the thoughts and feelings which would surge through your whole being as you seemed to shake off the atmosphere of earth at every beat of your tireless wings, and you may get some inkling of the source of inspiration and of the meaning of the lark's song. In his "Ode to the Nightingale," Keats may be accused of being fanciful. The bird may not be lamenting a world—

"Where youth grows pale and spectre-thin, and dies
Where beauty cannot keep her lustrous eyes."

But plainly something—some deep, strange

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emotion, thought, feeling, idea, call it what you will—is actually at work in the bird's consciousness as it sings, of which the notes and intonations are a definite form of expression, however inadequately we may be able to interpret them.

The nightingale in the thicket, the lark in the sky, the mistle-thrush addressing the storm, the wild swan crying as it passes overhead in the night, all these are speaking, and it is a fact of some significance that the men whom the world agrees to acclaim as great—Tennyson, Wordsworth, Shelley, Keats—have found a definite meaning in their speech. Those of us who see little in these things may be merely the victims of our own dulness.

SPECIFIC DIFFERENCES IN NOTES.

One of the readiest means of identifying birds—often the only one—is to listen attentively to their respective cries. Every species has a note of its own that sets it apart even from its nearest congener. One may readily detect the call of the lesser redpoll, chaffinch or greenfinch, in a flock of linnets, or the cry of the long-tailed tit or tree-creeper when the bird is invisible.

The most highly-skilled ornithologist could never be absolutely certain of the identity of the wood-wren, the chiff-chaff, and the willow-wren if he merely saw them moving in the tree: it is the characteristic note of each that makes its presence clear. But, as the season advances, this means of identification becomes more and more difficult. The familiar voices die down and in their place come faint chirpings and subdued notes. The young birds are now making their presence known, and their voices have not yet attained the distinguishing quality of their race. In the sun-steeped village in early June, the utter-

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ances of young starlings in the crevices of the wall and beneath the eaves resemble an escape of steam rather than the parental cry. In July the monotonous chant of the young greenfinches goes on for hours as the birds sit together on a single branch waiting to be fed, and the repeated cadence has no connection with the notes of their elders. Another complication arises to confuse the tyro in bird-lore. Adult birds not only abandon their spring song, but they often so modulate their call-notes that they can be hardly recognised. For instance, in August the willow-wren utters a soft, warning cry that is never heard in May. It resembles one of the call-notes of the chaffinch rather than that of the warbler, and in our experience, it is never used before the young are on the wing. The change in the cuckoo's cry as summer advances is also well marked.

DISTINGUISHING BIRDS BY THEIR NOTE.

If one were blind it might easily be thought that the book of nature would be practically sealed. That this is not so is shown by the existence of blind botanists who have been known to become extraordinarily proficient in their study, and are able to identify rare plants which have baffled experts to whom vision is vouchsafed. Man, the knower is so subtly constructed that, when one avenue of perception is closed, other senses grow keener to make up the deficiency, and both hearing and touch may reach a point of perfection and a power of discrimination of which the normally endowed being has no conception. When one reflects upon this matter, one begins to realise, how many of the activities of nature are conveyed to us by sound rather than by sight. As we wander through the woods and fields, we

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note that the corncrakes have returned to their old haunts : the cuckoo is back in the plantation on the hill, and the wood-wren and chiff-chaff in the great beeches by the river. By the grassy pathway the shrews are busy as of old, and the grasshopper warblers are safely back home in the tussocks of the willow-garth.

As night draws on we observe with pleasure that the owls are still at their old station, and yet, it is only on reflection that we remember that we have not caught even the faintest glimpse of any one of these creatures. Indeed, if it were not that they constantly proclaim their presence by their various cries, it is conceivable that we might have lived here for years and been utterly **unaware** of their existence.

Our knowledge of the presence of the grasshopper warbler, for instance, is almost always due to sound, for it is a singularly reticent little creature, and its insect-like note is usually the only clue one has to its identity. " Nothing," Gilbert White wrote long ago, " can be more amusing than the whisper of this little bird, which seems to be close by, though at a hundred yards distance, and when close to your ear is scarce any louder than when a great way off. Had I not been a little acquainted with insects, and known that the grasshopper kind is not yet hatched, I should have hardly believed but that it had been a *Locusta* whispering in the bushes. The country people laugh when you tell them that it is the note of a bird." This certainly also applies to the wood-wren. It is noteworthy how many people—woodmen and others—when questioned, have no knowledge whatever of the size and appearance of this bird, whose notes they have heard in the trees above their heads, summer by summer, from their earliest childhood.

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Many people indeed, deeply interested in bird life, tell us that they have the greatest difficulty in disentangling the notes heard in the spring chorus. In this case, their knowledge of the birds that may be in their immediate neighbourhood must be seriously curtailed.

An observer to whom every note brings instant recognition, tends to rely upon the ear rather than the eye. Few birds are silent, but many are invisible, or are indistinguishable, in the distance.

As one rests in some grassy hollow by the river side, it is quite easy to become aware of the presence of well-nigh every bird in the locality without opening the eyes. At first, certain obvious notes—the cuckoo's and the corncrake's pre-eminently—detach themselves from the silence. Then we are aware of a fainter background of sound. From the upper air comes the recurrent twitter of the swallow and house-martin, overborne by the shriller scream of the swift. A little party of grey linnets go by, and quite distinct from their harp-like notes, comes the delicate tinkle of the lesser redpoll. In the far distance, we mark the cawing of rooks, the faint singing of larks, the hissing of a nesting starling, and the intermingling notes of a thrush and blackbird. The smaller warblers are never far away: the churring song of the sedge-warbler in the willows, and the melody of the willow-wren, dying dreamily away, are close at hand, and are backed by the more sonorous voice of the black-cap, in the recesses of the wood beyond. From the bend of the stream comes the pipe of the sand-piper, and the gurgling notes of the dipper blend with the rippling of the water over the stones. For a moment the startling "karuch-karuch" of the waterhen overbears all the other sounds,

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and it seems as if silence followed, and a space of time is left before we can again take up the various unobtrusive cadences around us.

The dominant sense of sight forces impressions upon us so insistently that it may well be, we lose many of the fainter and less accentuated, but not the less valuable, messages from the world around us. The blind nature-lover, with ear ever attuned to catch whispers from "the mighty sum of things for ever speaking," may learn secrets that we with open eyes may easily miss. If we, with our careless observation, can check off, one by one, the more distinct voices of the birds, and can distinguish between the wing-beats of the wood-pigeon, the partridge, and the woodcock, how much more may he whose ear is trained to listen to "the voice of the silence" glean tidings from the murmuring of the never resting life around.

BIRDS' VOICES AT NIGHT.

The nightingale is the true minstrel of the darkness, but other birds, not content with singing during the day, frequently break the silent gloom of the woods and fields by an outburst of song. The sedge-warbler and the cuckoo are the most persistent of these, but many instances have been given of both the thrush and blackbird singing at midnight. If the corncrake's reiterated cry can be called a song, it also must be included with the night singers. The cries uttered by birds at night are often baffling and difficult to locate. The curious burr-rr-ing or whirring sound made by the nightjar, for example, has a most deceptive quality. At one moment one hears it from the left, then from the right: now it is in front and now behind, so that one seems to be surrounded by voices long before a glimpse of

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the moving form can be caught. It appears at first to the listener that the sound proceeds from the bird as it slowly wheels to and fro in the gloom, but more careful observation shows that the nightjar is constantly alighting, and that the cry comes only or chiefly when with head depressed, it crouches lengthwise on a bough.

At the season of the year when the migrants are moving from the far North there is always a sense of romance in the air when one rests on the cliffs facing the open sea, listening to the birds that pass in the night.

For a while no sound is heard save the sigh of the breeze and the distant lapping of the sea on the beach. Then you may hear a faint beating of wings, the sound growing more insistent for a brief second, and then falling again into silence. Some birds fly without uttering a note and one may speculate in vain as to the race of these travellers in the darkness that have come from afar and still press through the night seeking, with undeviating purpose, a destination that in some mysterious way is known to them alone.

But even when no cry is made, the beat of the wings may give a clue. The swish of the wild duck's pinion has a note of its own, and it may well be, if our ears were better attuned, we could distinguish the larger birds simply by their wing-sounds.

In many cases, however, the night-wanderers cry as they pass, and even then our sense of hearing is not always sufficiently acute to make certain of the species. This rarely happens in the daytime, but at night, faint whistles, familiar, yet having some strange quality, fall from the sky, and we pause to ask: "What was that?" It has been said that birds vary their note when flying at night, but it is quite possible that our

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senses of hearing and of sight are in subtle alliance, and that the sounds that come to us with clear significance in broad daylight lose something of their character when they reach us from the gloom.

But fortunately most of the night-flyers announce their presence in no uncertain way. We can never mistake the low, sibilant call-note of the redwing, nor the sharp "chack-chack" of the passing fieldfare. The peewit cries out its own name in the darkness, and the plaintive cadences of the golden plover, and the softly repeated whistle of the redshank, have an individuality that makes confusion impossible. When seen flying in the distance it is not always easy to tell the curlew from the whimbrel, for the difference in size is the only guide. But when the wild "curl-ee-ee" or more properly "url-ee-ee," for birds seem to be unable to pronounce consonants, speaking of desolate moors and marshes, comes, however faintly, through the darkness, you can never mistake the larger bird for its whistling relative—indeed, in view of the similarity of the appearance of the curlew and the whimbrel, one sometimes feels surprised at the entirely different quality of their cries.

Perhaps the most significant cries in the night arise when the great flocks of wild geese go by overhead, an incident, of course, common on the East Coast in winter. Very often the great birds move silently, but on occasion the ringing clamour falls from the heights, suggesting an aerial pack of hounds in full cry. Many superstitions have gathered around these flocks of wild geese—Gabriel Hounds—as they were called—and as they pass over the sleeping hamlet, the old wife will stop her ears lest the devil's pack hunting in the air should bring tidings of death.

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HUMAN QUALITY IN BIRDS' SONG.

Mr. Warde Fowler once wrote :—" Strange as it may seem, the song of birds may be more justly compared with the human voice when speaking than with a musical instrument or the human voice when singing." Certain critics deny this. Dr. Walter Collinge, for instance, tells us that he has listened to the rapturous torrent of the skylark, the beautiful modulations of the willow-wren and blackcap, and the song of the nightingale, and has failed altogether to catch any human note.

Of course, it is true that the tone of birds' songs differs materially from that of the human voice, but can it be truly said that birds' songs and call-notes are less like the human voice than other sounds in nature? In the sounds that proceed from inanimate things—the falling of a stone, the breaking of a branch, the sigh of the wind, and the beating of the sea—we find no expression of the thing itself, no clue to any inner feeling trying to make itself known. The wing-beats of the insect are mechanical; they tell us nothing of love or hate. The voices of mammals are devoid of range, they are for the most part incapable of indicating any but the crudest sensations.

Where, then, in the whole realm of nature, shall we find anything more nearly akin to the human than the voices of the birds? Here we have clearly life speaking to life—living things "a little apart from us truly," yet with love, anger, fear, maternal solitudes, warnings against danger and a hundred other subtle things in their hearts, which they desire to express, and which we are able to interpret because they are so closely akin to our own.

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In saying that the songs of birds may be more justly compared with the human voice when speaking rather than when singing we think that Mr. Warde Fowler made an important distinction. For the human singer is not really expressing himself: he may be merely repeating words that have no part or lot in his actual experience. But song is the way a bird converses about its ordinary every-day affairs: the actual things in its mind, rising from the squabbling twitters of the sparrows in the gutter, suggesting angry fish-wives, to the loftiest ideas of the nightingale in the gloaming or the lark in the sky, to which a Keats or a Shelley humbly tries to fit words.

It is a little difficult to understand Dr. Collinge's position for he, himself, quotes the late Mr. Rees with approval. Rees wrote:—"It were vain to attempt an interpretation of the skylark's carol for it cannot be compared with the outcome of any emotion felt in the human heart. But it is nevertheless akin to something that strives within us for existence."

Surely there must be something strangely human in a message that touches a secret spring deeply hidden within us, but that we ourselves have not the capacity to formulate and express. Is not this precisely what the great composers of music have done? And although the exalted strains of lark and nightingale may elude us, we can nevertheless listen to the birds in their less elevated moods, and know exactly what they are thinking about.

The actual tones of a bird's voice may differ from our own because the mechanism of sound production differs, but allowing for this difference and taking sound merely as a method of expressing ideas and emotions, we can think of nothing that comes nearer to the human voice

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than the notes of a bird. It is often said that the violin is the most human-like of instruments. But the mere wood and catgut could tell us nothing. It is the musician who cries aloud of gladness or despair, and although the mechanism he uses differs from our own vocal chords, we can listen and understand.

THE MUSICIAN AND THE BIRD.

It cannot be doubted that many composers have been indebted to birds for ideas in rhythm and melody. A musical correspondent writes that the lark's song always suggests to him the rhythm of a Highland reel. "The Scottish 'snap' or 'catch' too that may be defined as a peculiarity in Scottish music: the first two notes played in the same beat being the shorter (the song, 'Roy's Wife,' supplies examples) was in all probability caught from a bird. The performances of my brown linnet," he adds, "are full of 'snap.'" This musical device that waited centuries for recognition, and that was at length appropriated by some Highland artist who had the ear fine enough to catch the snap, and the skill to introduce it into his compositions, was considered so effective that Handel introduced it into his Organ Concerto in G minor (1739). My linnet never sings an unmusical note. Most of his phrases are attractive. Many are both rhythmical and melodious, and I can without difficulty, write them down and divide them into bars. He is the heir of hundreds of generations of linnets that have worked at the phrases he sings: and his song is an expression of that simplicity and beauty in music which many people long for who have listened to the eccentric compositions of the last decades. You have only to compare the brilliant song of a thrush on a summer evening or the mellow fluting of a black-

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bird with the song of, say, a North American Indian as reproduced by a phonograph, to see the high standard of the bird's performance. Bird music, like human music, must have been developing for centuries. The first musical efforts of birds undoubtedly consisted of single sounds, like the cheep of the sparrow; and possibly by conscious effort combined with the sheer love of singing, the nightingale, the blackbird and the thrush have become the artists they are now. Why has the sparrow lagged behind? Who can tell? Macgillivray, after careful anatomical research, said :—" The peculiar song of different species of birds depends on circumstances beyond our cognition." Music and the bird are both mysteries: and in the course of centuries, our cheery chum, the sparrow, may yet develop his phrases.

WHY BIRDS SING.

A writer in a medical journal once advanced a luminous explanation of the reason of the song in birds. He modestly disclaimed the actual discovery and remained content to announce it to the world.

" Those inveterate anthropomorphists, the poets," he wrote, " with Shelley at their head suppose birds to sing for sufficiently human reasons. They mostly imagine them to have arrived at the idea of a Creator—an idea really only attained quite late in the course of man's evolution—and they suppose the songs to be mainly expressive of praise and thanksgiving." It would be interesting to know what authority exists as to the date when the " idea of a Creator " first dawned on the minds of any of the living things created. So far as we can learn it is an idea of the hoariest antiquity, and we know no evidence whatever, that the idea of a Creator was, in fact,

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invented by comparatively modern anthropomorphists. Not the poets alone, but all the greatest thinkers throughout the ages when dealing with the song of birds—the glorious outburst of the lark, the deep, soul-stirring notes of the nightingale—appear to have been struck by the fact that here was an expression of intense feeling.

What precisely this feeling may be, untaught, wildly rapturous, what the objects may be which are :—

“ the fountains

Of thy happy strain;
What fields, or waves or mountains,
What shapes of sky or plain,”

are, by no means, easy to guess. Still, knowing that every sound that proceeds from a living creature—the moan of pain, the cry of fright, the chuckle of content—enables us to enter to some extent into the state of consciousness of which it is the expression, we are inclined to follow Tennyson, Wordsworth, Shelley, Keats when they read into the song of lark or nightingale, not only praise and thanksgiving, but many more subtle intuitions as well.

“ Teach us, sprite or bird,
What sweet thoughts are thine.
I have never heard
Praise of love or wine
That panted forth a strain of rapture so divine.”

But all this is the mere frivolity of fancy when regarded by the cold, clear, scientific eye. This then, is the final word “ entirely new ” “ of true originality ” given to humanity with the imprimatur of our medical journal :

“ Singers need plenty of drink, whether they are birds or human beings. This is evidenced by the merry noise in our gardens immediately after the rains in July. Birds sing because their throats have been lubricated by drink.”

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It is added that the writer persuaded birds to sing, right into the middle of winter, by supplying them with the small quantity of water contained in soaked bread.

But setting the poets and other "inveterate anthropomorphists" aside, and meeting the modern scribe on his own firm ground of fact we should like to observe (1) That birds largely cease to sing in July, however wet it may be: (2) that they sing most profusely and enthusiastically in the fine weather of April and May. And we would further ask why, if the writer has persuaded birds to sing right into the middle of winter by supplying them with a small quantity of water, nature herself should be less successful when she provides them with her own more abundant floods during the same period?

MIMICRY.

One interesting use to which certain species put their vocal powers is that of mimicry—a practice, we believe, never attempted by mammal (man of course accepted) reptile, or insect. The most striking instance of this mimicry is seen in the parrot, and is clearly the result of education. But the desire to reproduce sounds that may be heard around them is implanted in the breasts of many most dissimilar types, even in the wild state.

The trick of reproducing the notes of other birds, may be found, as Mr. E. P. Butterfield recently pointed out, even in the whinchat. Our raven, jackdaw, magpie, jay and starling, are all adepts at imitation, and, in America, the mocking-bird is notorious. A correspondent has stated that she taught a wild blackbird that frequented her garden to sing the notes of "Weel may the keel row" and Mr. Frank Finn has re-

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corded a case of a blackbird that used to utter the words " Pretty Polly " quite distinctly from a tall tree near his bed-room window in Regent's Park. He believed that unless the utterance of those words were a mere fluke the bird may have picked them up from a neighbouring parrot, for, he adds, the blackbird is at times imitative, though not nearly so much so as the starling, the sedge-warbler, or even the song-thrush.

Those who are fond of endeavouring to trace the " utility " of any unusual trait exhibited by wild creatures may be interested in dealing with this curious trick of mimicry. Although for the most part, we may take it, it comes merely from a natural delight in repeating sounds that are impressive, there are cases where it seems to be adopted with an ulterior motive. Audubon, the great American ornithologist, states that the Northern shrike imitates the cries of a bird in distress in order that it may lure others of the same species within striking distance, and the same habit has been attributed to our own great grey shrike. Mr. Frank Finn, in his valuable work " Bird Behaviour " calls attention to the fact that an Indian shrike, that preys on frogs, has a way of incorporating the screams of the hapless batrachians in its song, and he argues that other shrikes might easily begin imitating the cries of distressed birds merely for amusement, and then develop the habit for profit as well as pastime.

DIALECT IN BIRDS' SONG.

Most observers are aware that the songs of birds of the same species differ considerably even in a single locality. Thus a thrush or a skylark may often be noted that exceeds all other in the neighbourhood in the power and variety of its notes. In the Hartz mountains where the

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chaffinch is especially prized, any singer of exceptional sweetness is carefully marked down by bird-catchers who will make long expeditions in order to secure it. But these differences are those of one artist as compared with another. The dialect note is a thing apart. There is reason to think that a south-country bird, whilst preserving the phrases typical of its kind, develops an accent of its own that differs from that of a member of the same species in the north. The songs and call-notes of birds in Norway have often seemed to us to have a quality of their own that sets them a little apart from their kin in England. We have at times listened to a chaffinch in Norway, and although the phrases were quite familiar the intonation at first led us to doubt its identity. Mr. E. P. Butterfield, a very careful observer, confirms this opinion. "Many birds, he wrote, have what may be termed dialect notes in their song. This I have often noticed in the song of the chaffinch in various parts of Britain." Perhaps the peculiarity may apply especially to the chaffinch.

ABNORMAL SONG.

In some exceptional cases birds depart from the song of their race altogether. We have noted several cases of the kind, and Mr. Butterfield supplies the following instance. A game-keeper reported to him that he had heard a very remarkable song of a bird he could not identify. When the bird was located it turned out to be a mistle-thrush. Its song consisted of merely two or three notes that it kept repeating in a sepulchral strain, which we may conclude gave little or no clue to its identity.

A correspondent writing from Campden Hill Square, gave a somewhat similar account:—"Throughout February," he wrote, "a chaffinch

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and two blackbirds sang constantly in the Square. We got very tired of hearing one of the latter : his song was quite abnormal and very monotonous. He struck up soon after five o'clock each morning, and his song, which was often uttered when standing on the ground, was composed of an inconsequent idiotic phrase in which the second and fourth notes were the highest. This was repeated over and over again, and was most irritating. Many of the inhabitants of the Square complained bitterly of the bird and asked me if he was mad or love-sick. We had to put up with the performance up to the middle of May when it ceased, and I thought the bird had probably been killed by a cat. But early in the morning of May 27th I was in Lady Holland's Walk when I discovered that the " Mad Blackbird," as he had come to be called, had merely migrated to the grounds of Holland House. My own impression is that he was an old and feeble bird."

A Scotch correspondent gave another instance. In this case the bird was a thrush. Its peculiar obsession was to utter one loud piping note repeated tens of thousands of times in the first half of the year. Even when it attempted a normal song every interval was filled up with the exasperating pipe.

One usually thinks of the song of birds as a sign of joy, but there is no doubt that a succession of musical notes may at times express a very different emotion. Musical notes, indeed, as we have endeavoured to make clear, are used for the expression of the whole range of feeling that the bird actually experiences. Mr. W. H. Hudson tells us of a bird that he shot when singing. It fell wounded into a stream but still continued its song in the water. Even when retrieved it remained singing in the hand.

MARRIAGE

CHAPTER X

ÆSTHETIC SIDE OF LOVE-MAKING. CONJUGAL RESPONSIBILITY
IN BIRDS. MONOGAMY V. POLYGAMY. AFFINITIES IN BIRDS
APART FROM SEX. NESTING AGES.

In all matters relating to domesticity, birds would appear to stand far higher than mammals in the scheme of nature. The male quadruped has little or no sense of parental duty, and even when he refrains from devouring his offspring, he throws all the labour of home-building and of rearing upon his heavily-tasked mate. In defence of the young, it is almost invariably the mother who offers her life to the enemy ; the lord and master being usually engaged elsewhere on matters of purely personal interest. Compare this with the remarkable devotion of many of the smaller birds—the willow-wren or long-tailed tit, for example. For weeks the pair labour side by side, providing every accommodation and comfort for the coming nestlings that forethought can devise. Some idea of the extent of the task resting upon the long-tailed tits, for example, may be inferred from the fact that one nest alone contained 2,379 separate feathers. The marital and parental instinct of the male bird is a far higher and more responsible feeling than that seen to exist in the male mammal. In many cases the cock takes an equal part in the duty of incubation, and in almost all species, with the



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exception of those which are polygamous, the work of providing food and the general care of the family is divided equally between the sexes.

In the matter of courtship, too, birds stand far higher in the scheme of evolution than the mere mammal. Here the æsthetic side of love-making comes into view, almost for the first time, in our study of wild nature. The male, forgetting the bare utilitarian aspects of life, begins to develop graces of appearance and of manner, calculated to appeal to the more romantic sense of the lady-love. In the spring not only does the lapwing "get himself another crest" after the manner of the swain who dons a more effective necktie, but in addition he places himself in attitudes and adopts an altogether novel deportment, which we may safely assume has a generally winning effect upon the assembled fair ones who are coyly observing him.

That some of these attitudes, as, for example, that of the love-sick shag, do not seem suitable, from a merely human standpoint, to compel admiration, is beside the question. The eternal feminine is notoriously erratic in her likes and dislikes, and it may well be that this is one of the things which the feminine shag happens to like. Indeed, in bird life a whole range of personal fascinations are exhibited, grading down from the most graceful and beautiful to the wholly grotesque.

The peacock suddenly extends the starry wonder of his tail with a really radiant and impressive effect; the pigeon turns in studied circles, and with swelling throat coos a burning appeal; a manner of wooing which, curiously enough, is followed after a fashion by an altogether dissimilar bird, the long-eared owl; even the stolid rook with contorted form and reiterated caws

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seeks the attention of the hens, ascends to a lofty bough, and, suddenly distending his tail feathers with a rattling sound, he actually endeavours to sing.

Song, indeed, is a most remarkable manifestation of the love-instinct, for, as in the human race, it is pressed into action in the case of the most highly qualified and of the least qualified alike. Just as this vast motive may inspire the deathless lines of a Dante, a Tennyson, or a Shelley, so it may force into verse the retired auctioneer, the elderly farmer, or the hair-dresser's assistant, whose isolated efforts must sometimes startle their very producers when seen in cold print in the records of the breach-of-promise case. And, in like manner, the very bakers and candle-stick-makers of bird-life are rushed into competition with the heaven-born musicians directly their blood is touched by the fire of love and spring. Not alone does the lark "crowd the vast arches of the sky with living notes," and the nightingale "sate the hungry dusk with melody," but the cormorant on the rock tries his 'prentice hand, and the "corbie black" croons something which he plainly takes for a song as he sits on the withered stump.

Perhaps the one departure from our Western idea of morality to be seen in avian life occurs in the birds that practice polygamy. For although the raven and some birds of prey, if their mate be killed, find another with extraordinary quickness, even within a few hours—they certainly stick to her when she is alive. The polygamous system appears to work satisfactorily in the fowl tribe, as represented by domestic poultry, black grouse, capercaillie and others, but there is strong reason to think that if it were generally adopted it would lead to disaster.

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Mr. Ernest Thompson Seton, in a lecture on "The Natural History of the Ten Commandments" held that whenever the species that was monogamist confronted the species that adopted polygamy, in defence of its kind it won every time. One reason for this is that the monogamist young have two strong and wise parents to protect them whereas the polygamist young have only one protector and she, the weaker of the two. The reason, he added, why there is no more successful group of birds than the pigeons on the face of the earth, is because they maintain the highest monogamous standard.

Of the birds that pair for life, many instances are given of the strong bond of affection between certain elderly couples which had survived long years of domesticity.

A pair of pigeons of our own mated in their first year, reared a numerous family, and grew old side by side. The hen, at this time, became affected with a trouble which fanciers in those days described as "dead-wing"—i.e., the bird appeared to remain strong and healthy, but the wings became lax and feeble, and the victim was condemned to a life on the ground.

In these circumstances, she was placed in a little wire enclosure, open at the top, in a corner of the stable-yard, and here also the cock at once took up his abode. As a high-flying tumbler, he would occasionally take a few turns with the "kit" in the blue sky far above, but almost the whole of his time was spent in the dingy little nook in the angle of the stable wall, where, with many little caresses, he solaced the declining days of his life-long partner.

It is stated of an American wild goose that if its mate is killed it never seeks another. Mr. W. H. Hudson gives an example of a wild goose in

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South America that injured her wing and so was unable to join the others on the annual migration. When observed, she had set out on foot on her journey of thousands of miles, a destination she could never hope to reach—still closely attended by her mate, strong-winged himself but faithful to the end.

In this connection a word may be said in regard to the comradeship of birds, apart from the tie of sex. There is a certain difference in the affinities or links of affection that bind birds together. In many species these bonds appear to be non-existent: in others, they are stronger than death. Most species show some distress when their nestlings are in danger, and many will risk life in their defence, but it is not the parental instinct, so wonderfully and almost universally exhibited in wild life, that we have at the moment in mind. It is rather what may be described as a spirit of comradeship. It is somewhat singular that waterfowl, or at any rate birds most closely associated with water, seem to possess this spirit, and that it has been denied altogether to so many land birds.

Curiously enough it is more marked in birds that appear to meet together in chance gatherings and soon separate, as kittiwakes and terns may be seen to do, than in coveys of partridges and packs of grouse where the communal idea is most strongly in evidence.

Partridges, devoted as they are to their little ones, and leading a close communal life, lose all thought of their fellows in the moment of panic. You may shoot partridges, grouse, or pheasants all day, but no uninjured member of the pack or covey hesitates for a moment in its direct flight to safety, to turn to see how its fallen brother is faring.

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If, on the other hand, a kittiwake or a tern be shot at sea, its companions, careless of danger, will hover around with loud cries, descending upon the floating body, as though clearly aware that some dire mishap has befallen their friend, and that their help might be needed.

We remember once, on a sea-loch in Argyle-shire seeing a remarkable instance of affection between birds. An oyster-catcher, generally a wary fowl, crossed the bay at a considerable distance from the boat. A long shot was fired, and the bird held on its course, apparently untouched, until it reached the shingle, where it fell dead. Soon a second bird appeared, flying straight to the spot, and alighted beside its dead comrade. It remained there running round the prostrate form until the boat grated on the stones a few yards away. Even then it only flew for a little distance, and soon came running back. Charles St. John, in his "Wild Sports of the Highlands," gives similar instances in relation to wild swans. He writes:—"I fired right and left at two of the largest as they rose from the loch. The cartridge told well on one which fell dead on the water. The other flew off after the rest of the flock, but presently turned back, and after making two or three graceful sweeps over the body of his companion, fell headlong perfectly dead, almost upon her body."

Yarrell, again, records a like incident in regard to Bewick's swan.

"I was informed that when the wild swans were shot near Middleton, one of them was so reluctant to abandon a bird which was wounded, that it continued to fly about the spot for several hours after the rest of the flock had departed and that during the whole of this period its mournful cry was heard incessantly."

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In these two cases the birds were shot from flocks, and there is no reason to suppose they were mated.

A writer in the "Scotsman" some years ago gave another instance. "On the upper reaches of the river Annan," he wrote, "I was standing one afternoon on a bridge, watching the movements of a group of gulls floating downstream clustered together in a bunch. Closer examination showed that they were busily engaged assisting a wounded comrade which had met with some accident and was sitting low in the water. Progress was slow, but never once did the band of good Samaritans cease their efforts. Eventually the group of gulls turned at right angles and made for terra firma. On reaching the shallows the injured bird dragged itself on to the bank. Then I noticed that one of its wings had been badly hurt. Perched on a fence close to the waters edge were a couple of crows evidently waiting for a chance to attack the gull. Their patience was rewarded as a minute or two later an unusual noise caused the body guard to take to flight. Like a flash the crows swooped down on the wounded bird and with a few powerful strokes from their axe-like beaks finished the career of the gull. Immediately the dastardly work was over the black murderers cleared off. A little later the victim's friends returned, but on finding their comrade dead, flew off, uttering loud screeches.

Certainly in the case of both gulls and terns the fidelity is exhibited by the whole community, and sexual ties are not involved.

The ages at which wild birds usually mate are not easy to determine. As a general rule it may be said that the smaller races—the finches and warblers—nest in the first spring after they are

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hatched. Peregrine-falcons, ravens, guillemots, razorbills, partridges, pheasants, red grouse, and others, are held on good authority to wait the second spring. The different kind of gulls are seldom or never known to breed until the juvenile dress is laid aside. This is not done until the third spring or even the fourth. The rule, however, that birds assume their full mature plumage before they nest, is not always borne out. Kestrels and sparrow-hawks rear young families in their second season although they have not got rid of their immature feathers.

The age at which a bird nests would not appear to bear a definite relation to the average length of life of the species. Thus the life of the raven may extend to fifty years, or according to many records, very much longer: still it nests in its second season. The herring gull whose average life has been estimated at from 15 to 20 years, remains unmated until its third or fourth.

We have, from time to time, noted down records, from various sources, of the longevity of individual birds, but as these usually apply to birds living a sheltered life in aviaries or cages, they cannot be taken as representing the average or even the extreme duration of the life existence of the species in a wild state. Thrush 10 years, Robin 12, Canary 24, Lark 13, Goldfinch 15, Linnet 12, Pigeon 20, Partridge 15, Pheasant 15 Peacock 30, Goose 50, Parrot 60.

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CHAPTER XI

GENERAL REFERENCE TO INFANCY OF ANIMALS. ANIMALS WITH NO CHILDHOOD. INFANTS THAT ARE ESSENTIALLY DIFFERENT FROM THEIR PARENTS. CHILDREN THAT NEVER GROW UP. BIRDS THAT AVOID A CALLOW INFANCY. PARENTAL GUIDANCE. INSTINCTIVE KNOWLEDGE. INBORN FEAR. SPECIFIC NOTES INHERITED. WOODCOCK AND SNIPE CARRYING YOUNG. ADOPTION OF ORPHANS. MATERNAL INSTINCT IN VERY YOUNG BIRDS.

Taking man as the head of the animal kingdom, we find many interesting facts awaiting consideration when we come to compare his childhood with that of living creatures standing on the various lower rungs of the great ladder of evolution. The rule of existence would appear to be the longer the life the longer the childhood, although to this rule there are some singular exceptions. Thus, when man appears on the physical plane he is not only the most helpless of created beings, but he remains so for a much longer period than any other mammal in the scheme of nature.

The lion, the horse, and the deer, to take examples at random, have attained to the full development of their powers; they can contend with the strongest of their own species, bear heavy burdens, and perform feats of endurance on a level with the highest of their race at a period when man has barely acquired the power



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to walk alone. Lower in the scale, in the case of some birds, and especially of insects, we find creatures traversing the whole of their life-cycle, reaching their full measure of intelligence, developing their charm of song, and their marvellous powers of flight, reproducing their species, and passing through all the natural processes of maturity, decline, and death, while man is still lying well-nigh helpless, and giving, as yet, only intermittent signs of the existence of his slowly dawning mind. It thus becomes evident that, when very lofty mental and physical heights are to be built up, Nature, as an experienced architect, goes slow with her foundations, fixing each stone carefully, and for a long time has little to show in the way of progress.

In the case of her lesser structures, although the most wonderful care is still bestowed, this care is clearly based on the consideration of the various and less important life-purposes for which the structure itself is intended.

To begin with, certain animals there are which have literally no childhood whatever. These are, of necessity, the lowest forms of animal life. When they appear as separate existences it is impossible to say which is the parent and which is the child. Thus one of these unicellular individuals may be observed swimming about, feeding after its own peculiar manner, and apparently deriving reasonable satisfaction from life. Then, finding itself growing old and obese at the age of, say sixty minutes, it grows very thin in the middle, splits in two, and a couple of comely and able personalities may be observed in the place of one. Occasionally, by way of variety, two individuals incorporate themselves and multiplication proceeds by splitting as before. One advantage that these animalculæ possess,

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which may compensate them for the loss of childhood, is that they are the only living animals which can logically lay claim to physical immortality. The individual, in fact, never dies.

A second class exists in which the new arrivals on this material plane have a prolonged period of childhood, but they are born in a state altogether different from that of their parents, and gradually rise to a higher stage, reaching at last the parental development. Insects provide the most numerous examples of this class, and here we find the exceptions to the rule, "the longer the life, the longer the childhood," a rule which governs all the more highly placed species. In certain of the cicada, we have the extraordinary fact that no less than 17 years is spent in a state of immaturity in order to qualify the insect for a brief 15 days' existence in the upper air, which is roughly as though a man destined to live 70 years were obliged to devote 68 or 69 of them to helpless babyhood, in order that he might enjoy a manhood of the few remaining months.

In the instance of butterflies, again, we have a striking example of this second class. Judged by ordinary scientific definitions, the caterpillar is a creature of altogether different species from the butterfly. In structure, in habit, and, indeed, in every particular which goes to constitute a species, the caterpillar stands as far from the wonderful winged creature it is destined to become, as a man stands from one of Gustave Dore's Angels. True it is that in both caterpillar and man there are certain peculiarities, even in the physical structure, which are calculated to give rise to what Wordsworth described as "forward-reaching thoughts." A naturalist, who had no knowledge of the existence of a butterfly, and who was perforce obliged

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to content himself with a study of the caterpillar, might well ask himself what this strange being was intended eventually to develop into. For he would observe that the caterpillar (like the butterfly, if our naturalist only knew it), is made of a series of flattened rings, or rather of a double series of half-rings, connected along the sides by an elastic membrane, so as to permit the creature to breathe and eat. These rings are so devised that, as the caterpillar grows inside, room for expansion is made, and when at last the overstrained skin bursts, the larvæ emerges clad in a new skin, which has been forming under the old one. As this process is repeated, the fact would be brought home to the observer that he was examining a creature in a constant state of becoming something else, and if he pondered deeply as to what these things meant, it is quite conceivable that finally something remotely resembling a butterfly might arise before the eye of faith.

In man, again, in addition to his psychical development, which raises him far aloft beyond the merely animal kingdom, there are still distinct signs, on the purely physical side, that he is also a creature in the act of "becoming." In the brain of man there exists a tiny gland, known as the pineal gland, the meaning of which has long baffled the anatomist. It has been suggested that this is an organ in a state of atrophy but science fails altogether in suggesting any purpose which such a device could at any time have served. Certain modern thinkers hold that the pineal gland is nothing less than a rudimentary eye, which later ages may bring to perfection. Then, indeed, will Hamlet's words, "In my mind's eye, Horatio," be no mere figure of speech.

In frogs and toads, again, we have examples of the type which starts on their earthly pilgrimage,

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essentially different creatures from their progenitors. The frog begins life as a fish. In place of lungs, it breathes through external gills ; its body is limbless, ending in a long fish-like tail, with fin-like membranes with which the little animal propels itself through the water. Later, this strange being is built up before one's very eye into a quadruped. It develops lungs constructed on the latest principles ; it throws aside its fishy tail, projects from its person four useful legs, and in its new character proceeds to take full advantage of the meadow, the sun, and the sky.

There is one batrachian known as the axolotl that holds a unique place in the animal kingdom. It may be described as a child that refuses to grow up. It begins in an egg, becomes a tadpole, and at last, reaches the axolotl stage. Here it goes through its life-cycle : living, breeding and dying. But it would appear that Nature never intended it to remain an axolotl : this was merely an intermediate stage : it was really designed to grow into an amblystome, a creature of higher development. Professor Dumeril, Mr. Tegetmeier, and other naturalists, by reducing its supply of water, forced it to abandon its youth to adopt lungs for breathing and to take its proper place as an amblystome.

In the third class—the animals which are born on the same plane as their parents, and merely increase in size and power until full development is attained,—the whole of the higher creations, with man at their head, are included. Yet, even here, we find singular differences in the relative length of childhood. For example, the young of rabbits, like the young of men, are born in a state of perfectly helpless babyhood, demanding at every instant maternal warmth and sustenance, if they are to survive at all. The

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young hare, on the other hand, although, in fact, it lacks something of the precocity of the animal described by the late Baron Munchausen, still finds itself at once wide awake, protected from the weather by a suitable garb of fur, and ready at very brief notice to take a hand at the game of life.

We give these examples in order to make the complicated matter of the childhood of animals a little clearer.

Arriving somewhat tardily at our own subject we find that this rapid rise to maturity is seen in certain birds. The majority are born callow nestlings, and many days and even weeks must elapse before they begin even to "take notice," as the mothers say. But with a few species, of which the waterhen is a type, the young, like small aquatic Minervas, appear from the eggs fully armed, and may even be seen swimming with bits of shell still attached to their downy coats.

Birds of the Order Gallinæ again, which includes pheasants, partridges and grouse, are all active and in full possession of their faculties directly they are hatched; and it is noteworthy that in such cases the nests are made on the ground, although even to this rule certain exceptions exist. Although the nestlings are able to run freely at this earliest stage a considerable time passes before they attain their flight feathers, and it is clear that if they first saw light from the summit of a tree or from a lofty ledge in a cliff their disposition and ability to roam would be attended by serious consequences.

How far young birds and mammals depend upon the teaching of their elders, or to what extent the knowledge is inborn, are points upon which it is by no means easy to discriminate.

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Lord Grey of Falloden who, forgetting awhile the cares of State, brings his wide experience and keen intelligence to bear on many moot points in Natural History, has stated in an address, that wild things when young, until warned by their parents, have in many cases, no fear of man. Professor Thomson, too, remarks that experiments have shown that young birds are not usually rich in inborn knowledge and that a chick hatched in an incubator away from its kind has no inborn knowledge of the meaning of its unseen mother's cluck.

That parental guidance begins very early, even before the chick is actually hatched, is proved by many observations. Mr. E. Kay Robinson has stated that he once saw a young water-hen engaged in chipping the egg in which it was enclosed, and uttering from time to time, the low "peep" of its kind. At a warning cluck from its mother it instantly became silent, and ceased its efforts to free itself. But the view that young wild animals, both birds and beasts, have little or no inborn knowledge of the dangers of this strange material plane on which they find themselves placed, and of the best means of escaping them, is one that, to our mind, cannot be upheld. In the matter of instinctive fear it is useful to compare the behaviour of a young creature derived from a tame, domesticated stock, and one that owes its parentage to wild and naturally very shy forebears. A young canary born in a cage shows the utmost placidity in regard to its surroundings: a young grey linnet hatched from a "wild" egg, in the same circumstances, gives evidence of the wild blood running in its veins at a very early stage. The young of a tame rabbit or of a domestic cat, are contented little bundles of fur; but at the same age, the progeny

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of the wild rabbit and the wild cat are quivering, shrinking things that seem to feel in their bones that man's hand is that of an enemy.

The young plover barely free from the shell will squeeze itself flat on the earth in abject terror at the approach of the disturber, whilst the chick of the barn-door fowl will stroll casually over your boot in its search for stray morsels.

Possibly it might be argued that the young plover had already had the advantage of parental tuition, for we have seen that the mother's influence may extend to the chick even when in the egg.

In this case, the evidence of Miss E. L. Turner a lady ornithologist of high scientific attainment, may be quoted. She describes how certain shellduck's eggs were hatched out under a bantam. Directly the young were clear of the shell, they, one after another, ran for their lives and were lost. Now it seems plain that if the bantam had imparted any preliminary advice to the young that she was vicariously bringing into the world, it would have been to the effect that man was quite a decent food-supplying animal, and there was no necessity at all to steer clear of him.

From these and many other instances that might be cited we feel bound to infer, that whenever the fear of man is deeply implanted in the parental heart, the quality is directly transferred to the offspring, without the intervention of anything that can be called education. In regard to Professor Thomson's view that a chick hatched in an incubator has no inborn knowledge of the call note of its race, we think further experiments may be made with advantage.

We have reared many birds from "wild" eggs under canaries; and the harp-like note of the grey linnet, the pipe of the bullfinch, and the

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sharp "pink-pink" of the chaffinch, so characteristic of each species, have always been produced by the young birds respectively, although they had never had an opportunity of hearing the ancient slogans of their respective races.

Again, we have brought up thrushes, black-birds and larks from the nest, some of which became excellent singers, using of course their native notes, although they had never known parental care. Still it must be admitted that such birds often improve immensely as musicians if they are taken into the open to hear a wild note. This fact is well known to bird-fanciers, who will wander in the fields to discover a lark with exceptional powers of song: when they will bring their own young larks to the spot in order that they may take lessons from the master.

Thus we take leave to think that Nature has endowed her smaller children with an extraordinary stock of ready-made ideas, and that parental teaching plays a necessary, but comparatively a small part, in fitting the offspring for the ordinary conditions of wild life.

The care of the mother-bird for her young differs materially in different species. Most birds show some anxiety when their little ones are threatened, but in certain species parental solicitude rises to extraordinary heights, and is displayed in many diverse ways. Skuas, terns, mistle-thrushes, fieldfares and others will fiercely attack the invader—man or dog—sometimes actually striking. The partridge and snipe employ ingenious devices; luring the trespasser away by feigned lameness.

When young birds are taken from the nest the parents will frequently follow them for long distances and feed them in a cage. We have a record of a tawny owl which night by night brought

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mice to the wired enclosure where its nestlings were confined.

Certain birds will carry their young bodily from what they conceive to be the danger zone. This has been proved conclusively in regard to the woodcock, and there is reason to believe that it also, on occasion, applies to the snipe. Two writers in the "Field" have stated that they have witnessed such an occurrence, and we have received the following corroboration from a lady in Suffolk. "I should like to state"—she writes, "that when I was down on the marshes near Bungay I saw, at close quarters, a snipe pick up one of her brood and fly away with it. She held it apparently between her beak and her breast and made three attempts to pick it up before rising in the air and successfully flying off with it."

The description of the way of bearing the burden coincides with the manner of the woodcock: an incident, we believe, that the writer had never witnessed.

It has been stated that guillemots and razor-bills carry their young on their backs from the lofty ledges of the cliff to the sea below. We have never found reliable evidence of this, nor do we believe it to be necessary. The fully-fledged young stand for days on the ledges, extending from time to time, their wings. A slight impetus given by the parents would launch them into the air when with fully spread pinions they would easily make the descent with safety.

That most birds have the parental instinct strongly developed may be seen in many ways. It is often, indeed, brought to bear vicariously in the case of the nestlings of other birds.

If a pair of house-martins when rearing, suffer from some fatality, it is no uncommon thing to see the neighbours adopting the orphans, and

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bringing food to the motherless nest alternately with their own. A hungry young cuckoo appears to demand sustenance from the universe, and its impatient cries are often responded to by passing birds other than its foster parents.

A skylark captured with her young will continue to feed them in a cage, and if other nestlings are introduced before her own have become independent she will add the little aliens cheerfully to her family, and proceed to rear relay and relay, through the whole season.

Bird-catchers avail themselves of this altruistic trait in her character in order to save themselves the trouble of hand-feeding, reducing her labours to a minimum by a constant and plentiful supply of food close at hand.

In this connection it is interesting to observe that the nestlings themselves, at a very early age, begin to show a disposition to help the mother in the care of the babies. A noteworthy instance of this was recently sent to us by Mrs. S. W. Richardson from Acton, Middlesex.

“Wishing to have a hand-reared blackbird,” she wrote, “I took a young one out of the nest in my garden and fed it by hand on worms, insects, etc. When it was between three and four weeks old I took two young starlings also to rear by hand. The latter birds as every one knows require unceasing attention as they are always hungry and cry vociferously until a worm or other delicacy is put into their mouths. At this time the blackbird was beginning to fly about but still gaped for food. At first he was frightened at the loud-voiced and energetic starlings though he would sit by the nest and watch me feeding them, turning his head first on one side and then on the other as though in wonderment and occasionally gaping for part of the good fare

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to be given him. What was my surprise and delight when one day he collected two or three woodlice I had given him in his beak and hopping to the edge of the nest very nimbly poked it down the throat of one of the babies, and from that day to this he has continued to feed them untiringly, so much so that in order to insure him getting enough to eat himself I have had to shut him up alone out of hearing of the persistent voices of his adopted children until he swallowed a little food which then he did very reluctantly.

“ It was very interesting to note that never once so far as I saw did he himself eat what he considered the daintiest morsels which he had been specially fond of before he started feeding the starlings, but mealworms, small garden worms, woodlice, flies, etc., which he always carefully killed by squeezing in his beak and hammering on the table first, he gave to the babies. If a worm was specially tough, or I gave him a hard-cased beetle, then he would eat it himself evidently considering it too indigestible for his young charges.

“ I have never heard or seen a similar case where a young bird in captivity, and still gaping for food himself, has taken over the duties of a parent, and it appears to me especially curious when the adopted ones are of a different kind of bird from himself.”

THE BIRD AND THE TREE

CHAPTER XII

TREE-LOVERS. UNUSUAL PERCHERS. SWALLOWS AND
PIGEONS IN RELATION TO TREES. EVOLUTION OF PERCHING
HABIT. PARTRIDGES AND SNIPE PERCHING.

Trees would appear to be the natural habitation of birds, and it is interesting to note how few species, even of those not recognised as perching races, refuse altogether to avail themselves of the shelter and security of wide-spreading branches. All the smaller birds—warblers, finches, tits, buntings, not to name the crows and most birds-of-prey—rest on boughs and in the vast majority of cases use the tree as a rearing place for their young.

The skylark may be cited as a species which divides its time between heaven and earth, and leaves the tree out of account altogether. But this, though largely true, is not altogether so. Taking the tree in a wide sense, to include shrub, bush, and hedge, we have many instances of the skylark using this form of lodgment. It is no uncommon thing to hear a lark singing on the top of a closely-cut hedge, although we are not aware of any well-authenticated record of this bird deliberately alighting and remaining perched upon a single bough. Of the pipits, the tree-pipit alone habitually frequents the branches, but the meadow-pipit, and even the rock-pipit, will use the tree on occasions, more or less rare. In the

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case of the wagtails, the yellow may be described as a tree-perching bird ; it can be observed, especially when its young are hidden in the herbage of a neighbouring field, alighting on the topmost boughs of the tall hedge-row very much after the manner of the yellow-hammer. Both the pied and the grey wagtails regularly perch on trees, but they would seem normally to prefer a flat surface, as of a rock or wall, to rest upon. Their feet, indeed, being of lark-like character, are formed to enable them to trip lightly and swiftly upon the level, but plainly lack something of the grasping power by which the tit or finch clings to a slender spray, no matter how rudely it may be swept to and fro by the strongest winds.

This statement also applies to the wheatear, for although its congeners, the whinchat and the stonechat, will rest securely on the slender support of the telegraph wire, we, personally, have only seen the wheatear take to even the stouter branch of a tree on one or two isolated occasions. It is clear that lark, wheatear, and many other species choose instinctively a surface sufficiently broad to permit the foot and claws to rest flatly upon it, and that any resting place that involves a curved grasp is more or less irksome or inconvenient. This is conspicuously true of all the wader clan, and of all birds with webbed feet. Yet numbers even of these unlikely subjects will, on occasion, betake themselves to trees, and it must be noted that some birds—the herons, for example—which seem singularly unfitted by Nature for arboreal life, none the less habitually both perch and nest in branches.

Of birds of the type of the mallard, the water-hen, and the dipper, although they can hardly be described as even occasional perching birds, still all three, at times, use the tree as a nesting

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place. The mallard's eggs are frequently found in pollard willows, at a considerable elevation from the ground, and a photograph by Mr. Riley Fortune in Nelson's "Birds of Yorkshire" shows a dipper's nest perched high upon a bough, overhanging a stream. It is by no means uncommon to find the waterhen's nest in fairly high bushes, and the bird herself may sometimes be seen resting, awkwardly enough, it must be confessed, on some of the upper branches.

In the case of the true sea-fowl few indeed can, by any stretch of reasoning, be regarded as tree-lovers. Milton writes how

" Upon a tree,
The middle tree, and highest there that grew,"

sat Satan disguised as a cormorant, and the cormorants certainly are a race which take readily to perching and on occasion, as in the case of a colony on a fresh-water lake in Ireland, described by Mr. Jourdain, to nesting in trees. We have it on record that a cormorant was not long ago seen perched on the cross of a church steeple in the centre of England. A pair of gannets, too, upset certain seemingly well-established theories by alighting on the North British Hotel in Edinburgh, but this is rather beside the question.

The fact remains, however, that for the host of ocean dwellers—gulls, terns, guillemots and auks—the tree may be said to have little or no attraction. Still many gulls, the kittiwake especially, alight readily on houses, sheds, railings and upright posts, so it is probable that their natural habit is being modified by environment.

In the matter of short-eared owls discussions have from time to time arisen as to whether these birds are ever known to rest upon trees. Certain dogmatists have affirmed that they are not. Further observation has shown, however, that

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although these owls differ from their congeners in the choice of a nesting site, and that their habit is not normally arboreal, they are none the less quite ready to take a perch on a suitable bough whenever occasion offers.

Two classes of birds, most dissimilar in habits, may now be considered in relation to trees—the swallows and the pigeons. The swallows, with which for our present purpose we include the swift (it is always difficult, indeed, mentally to divorce the swift from the swallows, remembering the number of strongly marked characteristics that the birds have in common) cannot be regarded as birds possessing a true and natural affinity for tree-life. Although the swallow itself, the house-martin, and, more rarely, the sand-martin, all alight upon boughs, they appear to do so merely to rest, selecting for the most part a dead and conspicuous branch. They never move freely in dense foliage, as though delighting in the play of light and shadow in the leaves, as the willow-wren, whitethroat, and others of the smaller races may be seen to do. For them the tree is merely a fixed station, to be deserted directly the tired wing is sufficiently restored to permit the wanderer to return to its native element. In the case of the swift, so truly is he a creature of the air that if it were not for the exigencies of nesting it would seem he would spurn earth altogether.

There is strong reason to think that swifts, at times, ascend to a great height, and spend the whole night in the air. Mr. W. H. Hudson assumes this to be so, and he records certain interesting observations in support of his belief.

We have never heard of a swift attempting to alight upon a tree, nor even upon a roof. His feet, constructed with two toes in front and two

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behind, enable him to cling to vertical masonry, but do not appear to permit him to perch, or even to walk. If a swift be observed approaching the hole where the nest is placed, where access is gained by first alighting on a broad slab of stone in front, he will be seen to fall upon this with wings outspread, and then, using his wings like the flappers of a seal, will shuffle across the intervening space to the nesting hole.

Turning to the pigeons, the ring-dove and the stock-dove are both tree-lovers, but the rock-dove, true to the cliffs, rarely, if ever, so far as our experience goes, alights upon branches. It is interesting to note that the domesticated descendants of the rock-dove—the true blue rocks which the pigeon-shooters of Monte Carlo demand because of their exceptional power of flight, retain the ancestral distaste for perching upon boughs—although many varieties of tame pigeons, less pure in strain, fantails, for example, take quite kindly to the trees in the neighbourhood of their lofts.

Of the game-birds, the capercaillie, the black grouse, pheasant, red grouse, and partridge, the three first-named are distinctly birds of the tree. The partridge and the red grouse, however, rarely desert their native earth; indeed, no bird is so true to the special environment it has chosen as the red grouse is to the heather. Yet occasion may arise when even the red grouse takes advantage of the tree. In hard winters the spectacle may be sometimes witnessed of a pack of grouse perched upon the branches of a mountain ash greedily devouring the berries.

Although it is uncommon for the partridge to leave terra firma for anything more ambitious than the top of a gate, a haystack or the roof of a barn such cases at times occur. Lord Cran-

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brooke in a letter to the "Field" in November, 1921, wrote that when shooting near Saxmundham, he saw a covey of partridges get up from the top of a tree. The tree was standing by itself in a park, and the birds came from the branches at the top some 40 feet high. The editor remarked that only one or two cases of the kind had been placed on record.

Birds of the wader tribe cannot be deemed arboreal, but here again exceptions occur. The common sandpiper frequently alights on posts and railings, and will occasionally take to the exposed branch of a tree. On many occasions, especially in Norway, we have seen redshanks alight on the summits of trees, and remain there piping disconsolately until we withdrew from the scene. In the case of these the young birds were hidden in the vicinity, and the parents plainly seized upon any point of vantage, however inconvenient, in order to watch our movements.

It may also be said the redshank appeared to squat on the massed foliage rather than to grasp firmly any individual branch. The only case of a snipe alighting that has come under our own notice was when a bird drooped down on the broad, feathery plume of a fir tree, and balanced itself awkwardly with its wings, soon to take flight from a position that it plainly found embarrassing. Mr. Boyes of Beverley, however, records a much more striking instance. In the "Field" (July 1915) he writes:—

"I have on several occasions recently had the pleasure of seeing and hearing snipe drumming over a marshy spot not far from Beverley, and I have seen five drumming at the same time, near to each other, and each one uttering its breeding notes. On every visit I have noticed a snipe after drumming alight on the dead branch of a

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tree-top always exactly in the same place, and all the time it was sitting there it was uttering the usual cries of "ka-ka-ka-ka," so well known to ornithologists in the breeding season: then it would suddenly leave the branch and commence shooting downwards through the air, producing the peculiar sound known as drumming or bleating.

On its again performing it would often be joined by another, perhaps its mate. They would drum for some time and then, closing their wings over their backs in the manner of tame pigeons, would suddenly drop into the sedges: when about to do this they would give a special sort of squeak, then both drop near each other. After a time one would rise and begin the performance over again, and again light on the branch of the tree: it would allow me to walk quite near to it and I noticed it when singing its love song of "ka-ka-ka-ka," it did not seem to open its beak. This snipe might be seen in the tree at any time of the day. I have often seen snipe on rails and posts but not before on a tree-top. A pair of redshanks nesting in the same marsh may occasionally be seen on another tree, but this is not so unusual in the breeding season."



PEREGRINE FALCON

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CHAPTER XIII

NEGLECT IN THE PAST. MODERN ARTISTS. THE WORK OF MR. A. THORBURN. COLOUR AND FORM IN BIRD LIFE. JAPANESE BIRD PORTRAITURE. THE ARTISTRY OF NATURE. REPRODUCTION OF COLOURS IN NATURE.

Of all the subjects of art the bird seems to have been one of the most neglected. The human figure, a variety of types from the mammalian world, mountains, trees, and flowers have all attracted the artist from time immemorial. But the bird, often exquisite alike in colour and form, instinct with life, and capable of the most varied and charming expression, has constantly been left out in the cold. It has been said that the English artist, at any rate, attempted only the heron and wild duck, and these he merely threw in as accessories to his landscape, and rarely troubled to draw or colour accurately.

In all the older works of Art, the different mammalian types may be distinguished with certainty. But we may look in vain for drawings that depict the characteristic differences between the grey linnet and the greenfinch, or between the nightingale and the robin.

So it may fairly be said that although the value of the bird for the more formal purpose of decoration has always been recognised, it is only within comparatively recent years that our avifauna has been considered worthy of being made the main theme of a picture. Now-a-days, however,

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bird figures taken by the medium of the camera have become generally popular, and not a few eminent artists, of whom Mr. Archibald Thorburn and Mr. Lodge are representative, devote themselves almost solely to avian portrayal.

In Mr. Thorburn's work one has often wondered how the more delicate effects—the frown of the eagle, the depressed head of the sleeping wader, the lazy abandonment of the dusting partridge, the easy swing of the tit on the frailest spray, and the hundred other subtle suggestions of rest and movement, faint discomfort in wind and glad activity in sunshine—have been so cunningly seized upon and set down in mere line and colour. In “A Naturalist's Sketch-Book” the artist shows us how from faintly traced beginnings the very spirit and idea of movement in the living thing are slowly built up, and, as he truly writes, these may be more readily suggested in sketches than in elaborate and finished pictures. All bird lovers, we imagine, can recall some little scene from Nature that has impressed them: the stolid greenfinches on the apple bough: the little party of goldfinches that on yellow-lined wings flit across the waste to alight with sweet call-notes on the seed-plumes that sink beneath their weight. In the artist's pages every light poise and casual gesture has been reproduced with a fidelity that brings about instant recognition.

In order adequately to depict birds a man must be both a naturalist and an artist, and this combination is, of necessity, rare. The naturalist knows full well the charm and pictorial value of his little bird-friends, but to him the medium of brush and pencil is often denied. By the use of the camera, however, he has been able to represent something of the vast range of expression seen in the dwellers in our fields and woods, on moorland, rocks and sea.

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For the man who has the patience and love of Nature to wait and watch, birds will be found to provide a series of constant surprises. If he has the executive power of the artist as well, a vast field of interesting labour is thrown open to him. If he is attracted by colour mainly, although it may be true that the tropics supply a more dazzling variety, none the less he will find hues in every home-land wood and glade which will test his skill to the utmost. Leaving the pheasant and kingfisher aside, there are refinements and harmonies of colouring on every hand that the gaudiest species often lack. The black-blue gleam on the wing of the swallow as it darts past in the sunshine, the delicate pencilling of the sandpiper, or the mottling of the golden plover, are examples of what may be described as the beauty of the unobtrusive; and the feathers of the snipe or of the grey wagtail (to take two species at haphazard) are colour schemes exquisite alike in tone, variety, and arrangement.

On the side of form, it has been claimed that England possesses one of the most graceful birds in existence in the heron. The flamingo, although a large flock rising with dazzling white and scarlet plumes glancing in the sun has been described as one of the most striking sights in the whole range of bird life, is in itself badly proportioned. The stork, again, is too thickly-set to be an emblem of grace; but the heron, with its peculiar lithe slenderness of form, charms the artistic sense to an extent only equalled, it may be, by the exquisitely curving lines of the swan.

Another interesting point about birds is the way in which they seem to harmonise with and become a part of their surroundings. No sea picture would be complete without the gulls describing their sweeping curves over the waves;

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the curlew moving in the misty distance over the wild and lonely moor, seems nothing less than the embodied spirit of the place ; and a subtle relation will be seen at once to exist between the stern gaunt form of the eagle and the dark rocky fastnesses over which it presides.

So, as the bird-artist roams over the country side, he finds every bird in its own proper setting and he cannot fail to recognise the sympathetic bond that links every living form with its natural environment.

But what is even of more importance to the artist than anatomy, colour, or surroundings, is the soul of the creature itself. The ancient Eastern occultists taught that birds and mammals had not yet attained to the highly specialised individual soul found in the human ; that every man had become a species in himself, and had acquired characteristics, habits, tricks of manner which none but he possessed. On the other hand, the bird belonging to each marked group shared the soul common to the group, and thus all of a given species had the same little peculiarities, and acted in a like manner in any given circumstances.

Thus, if one robin be observed in a South-country garden and another in a wayside hedge in Scotland, all the instinctive movements, the mode of alighting, the turn of head and flick of tail will be seen to be identical in each, and it is to this robin-soul that the artist must direct his attention if he would depict the bird as it lives and moves. So he will study the animating principle which leads the blue tit to hang head downwards, the creeper to move spirally around the tree-trunk, and the kestrel to hang suspended in the air. It is here, perhaps, that the Japanese artist excels in the matter of bird portraiture.

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Seen through Western eye, his work may lack perspective and a knowledge of light and shade, but, none the less, the Japanese has a marvellous power of grasping the spirit behind the physical manifestation, and he fearlessly employs any means which may enable him to express it.

It may fairly be said that the Japanese artist draws his inspiration to a very large extent from birds and flowers. In no country in the world does bird life take so prominent a place. Mr. Ken Hoshino, the well-known Japanese art expert, has kindly written at our request the following comments on the more recent work of his countrymen, and we feel certain our readers will be interested to learn how the subject of the delineation of wild nature is regarded from the stand-point of the East. Mr. Hoshino writes :—

“ That Hokusai was one of the greatest artists of the world cannot be disputed. All his pictures exhibit life and movement most marvellously. Next to Hokusai's pictures I place two pictures by Zeshin, ‘ Flight of Ravens in Sunset Sky ’ and ‘ Seven Gods of Luck in the Treasure Boat. ’ I think his pictures are always very original. In ‘ Flight of Ravens in the Sunset Sky, ’ I see only a couple of ravens, and the orange-colour background in the extreme top of the picture, leaving the nine-tenths of the paper in blank—yet the balance of the picture is not violated in the least. I seem to see hundreds of ravens flying in the sunset sky. Next to Zeshin's pictures I place the pictures by Gekko. Many bird studies of Gekko, Seiko, and Kogio are most exquisite. It seems to me that Japanese artists cannot compete with European artists in landscape or portrait painting : but in the study of birds and flowers they exhibit most wonderful knowledge and skill. Most of the greatest artists

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in Japan, from the tenth century to the present time, have been artists of 'Kacho' (birds and flowers). I believe that it is not too much to say that Japanese art would be of but a negligible quality, were it not for the school of birds and flowers.

"Yet Japanese studies of birds and flowers are not satisfactory to some who look upon them with scientific bias, for there is very little feeling of far and near, light and shade. To them Japanese studies are merely conventional designs for screens—and as such they admire them: but to me their pictures are true conceptions of nature. In their pictures I see the love of nature that moved the artists' brushes. The lack of perspective does not make their pictures less true to nature. In their own language they express the beauty of nature faithfully. They are not hampered by the laws of perspective and light and shade. The brush of an artist moves freely as he sets to work: therefore there is life in his bird and growth in his plant. Those who are familiar with Japanese literature will surely find there is a great deal of similarity between Japanese paintings and their poetry. As a Japanese poem expresses the wonderful beauty of heaven and earth in its seventeen phonetic sounds, so a Japanese picture unfolds the beauty of nature in a few lines and dots. There is a picture before me called 'Cuckoo and Moon' by Gekko. The picture is extremely simple yet it suggests the loneliness of the quiet night and the pathos of the mid-autumn night. Immediately I recalled a verse by Sanesada:—

"None but the waning moon of morn
Heard the hototogiau (cuckoo) cry
In anguish for her heart's blood torn.
Thrill upwards to the paling sky."

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No artist is so daring in the blending and contrasting of colour as Nature constantly shows herself to be. In the Natural History Museum at South Kensington, a large case is set apart simply to illustrate the richness, delicacy, and subtle gradations of colouring as it appears among birds and butterflies. Many of the combinations would appear to be almost reckless, yet they are invariably effective. A colour scheme in the gaudiest yellow, red and blue might well appal the modern decadent in Art, yet it is fully justified in certain of the parrots; and the blue, black and brown of one of the rollers, unpromising as they may sound, blend together to form a most dainty array. Extraordinary results are also attained by the use of iridescent colouring seen to the greatest advantage in the plumage of the sun-birds and humming-birds. It is somewhat curious to note that in our own sombre clime, the only bird with the courage to assume the rainbow hues common to the tropics is the kingfisher. The pheasant brought his native plumes with him from the East.

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It was a fancy of Richard Jefferies—perhaps more than mere fancy—that the colours of wild creatures were selected from their surroundings, as if they had been gathered and skilfully mingled together: that they can be traced and paralleled in the trees, bushes, grasses and flowers as if extracted from them by some secret alchemy. It is certainly true that if we study carefully the environment of many living things we shall find not only the hues and shades, but at times, the actual patterns themselves which afterwards appear in the feather of the bird, or the wing of the butterfly that haunts that particular spot. One might imagine that Nature, the great Artist,

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after painting on her canvas the vast spaces of sky, sea, forest and field, paused in her work to consider her colour schemes for the living creatures which she had designed to give animation to her pictures. In the paints still wet upon her palette she found, ready to her hand, the exact hues needed for her purpose.

Thus when the sea had been completed, with its greys and blues and foamy whites, she merely touched again with a finer brush her unexhausted colours, and lo : here a herring-gull or a kittiwake appears, repeating with perfect fidelity each delicate tint of blue and grey and the curving whiteness of the foam beneath. In this connection Mr. Thorburn writes, " I have often been struck with the repetition of the colours in a bird's surroundings, in the colour of the bird itself, when it can have nothing whatever to do with protective colouring. In the eider drake, for instance, a very showy bird, the tint of a sea-green wave is curiously reproduced in the neck."

Again Nature paints a breezy common. Masses of yellow-flowered gorse, in irregular lines, extend to the far background. Nearer at hand the tall green bracken grows, and in the moister recesses, the figwort, with its velvety topknot of flowers. The general colour scheme is green, with vivid touches of gold and red. Now a goldfinch alights on a spray, and we see the velvety red of the flower repeated on his cap, and the golden glint of the gorse on his wing : or a greenfinch hovers near, clad in the green hues of the bracken with the tender yellow tint of the young shoots on the primary feathers at his side. In all her minuter and less obvious work, too, Nature uses her familiar combinations of colour over and over again. Examine carefully the little nook at the fence side—the leaves from the taller trees have drifted here, and they have mingled with the

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smaller leaves of the hedge. Autumn after autumn, the discarded foliage has fallen, slowly blending with the damp mould : and save for the moss on the old stone, and the touch of red of the sorrel, there is no hint of bright colours—a study in drabs, browns and greys alone is given, most unobtrusive, yet so skilfully mingled and contrasted that it possesses a beauty entirely its own. And now if we scrutinize the plumage of the partridge, for whom this recess is the innermost home, we find every combination in the shades of the dead and dying leaves presented to us again, even down to the touch of red sorrel on the tail.

To the wanderer in the open a thousand hints will come of this reproduction of colour. The dipper in the stream suggests a black pebble flecked with foam from the waterfall : the willow wren in hue, and even in form, finds its counterpart in the young, greenish-yellow leaves of the poplar amidst which it so gracefully moves. Of the wonderful analogies between flowers and butterflies much might be said. One remarkable instance, however, must suffice. Look inside the bell of a foxglove and note the delicate pattern formed by the brown and black spots. Then examine the underside of the wing of the common blue butterfly, and see how accurately this charming little device has been copied. In most of these cases there is no question of protective arrangement involved : the idea seems to be the mere reproduction of something beautiful in itself.

The Great Artist Nature, indeed, must have had an abundance of colour—blue, for instance—when she painted the skies : she might well spare a little to touch the wings of the butterfly, the petals of the bluebell, and the eggs of the hedge-sparrow.

BIRDS OF THE POETS

CHAPTER XIV

BIRDS OF SHAKESPEARE, BYRON, KEATS, SHELLEY AND BURNS.
PRE-EMINENCE OF DANTE, WORDSWORTH AND TENNYSON AS
ORNITHOLOGISTS. THE ANIMISM OF WALT WHITMAN. FRANCIS
THOMPSON AND JOHN MASEFIELD IN RELATION TO BIRDS.

The attitude of our poets to the birds of their native land is always a matter of interest. We take it rather for granted that all poets must needs love birds as an aspect of nature which they could not well afford to neglect. This, however, is not strictly the case. Of course no one of our greatest writers has failed to use avian figures from which to draw an illustration or to make graphic a line. But it is somewhat striking to note how few of the immortals appear to have studied a given species in order to show us something of the inner mystery of its being, of necessity invisible to the common eye. Indeed, in this respect, birds have fared far worse than trees and flowers.

Milton for example, gives us little, and Browning even less, the latter confining himself largely to dogs so far as animated nature goes. Shakespeare, of course, who has taken all knowledge to be his province, provides, from time to time, some exquisite little vignette drawn obviously on the spot :—

“ This guest of summer,
The temple-haunting martlet does approve
By his loved mansionry that the heaven's breath
Smells wooingly here : no jetty, frieze
Buttress, nor coigne of vantage, but this bird
Hath made his pendent bed.”

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A true picture of the nesting of the house martin. But these examples are few.

Even from Keats and Shelley, notwithstanding their abnormal sensitiveness to the finer vibrations from nature, we gain comparatively little. Each is attracted by the song rather than by the bird itself, and thus the nightingale and the lark claim their main attention. Truly the bird whose notes :—

“Sate the hungry dusk with melody.”

And of which it was written :—

“ The same which oft-times hath
Charmed magic casements opening on the foam
Of perilous seas in faery lands forlorn,”

said to be the most mystically musical lines in all literature, can hardly complain of lack of appreciation : and the skylark, again—the theme of Shelley’s world-famous ode, is amply treated. But still it may be repeated that we hardly get from Keats and Shelley the bird-pictures which we fancy we have a right to expect.

From Byron we look for little, and we are not disappointed. When, in the person of Manfred, he meets the devil on the summit of the Jungfrau, and proceeds to bully him, he sees and presents us with a striking picture of an eagle (probably the golden) :

“ Thou winged and cloud-cleaving minister,
Thou art gone
Where the eye cannot follow thee, but thine
Still pierces downwards, onwards, and above
With a pervading vision.”

But the sombre genius is too deeply involved with the turbulent evolution of his own somewhat refractory soul to pay much attention to ornithology.

From Burns, again, working in the open, and essentially a poet of country life, one might reasonably have hoped for many intimate glimpses

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of the birds, with which he must have been familiar. But, although he touches on many species—water fowl on Loch Turit, owl, thrush, woodlark, laverock, blackbird, and so on—he usually contrives to bring them to bear on his ever present lassies O, and there is not much either of solid information or of picturesque description to be gleaned from him.

To Burns, however, we are indebted for this honest little appreciation of the grey linnet :—

“ I wad na gie the lintie’s sang,
Sae merry o’er the broomy lea,
For a’ the notes that ever rang
Fra a’ the harps o’ minstrelsy.”

Thus it comes about that we instinctively turn to Wordsworth and to Tennyson whenever we would find bird pictures drawn from the life. Here species are delineated with care and truth from sheer love of the subject, and not from a mere extraneous desire to point a moral or adorn a tale.

For the field naturalist it is one of the delights of early spring to peer through the interstices of the boughs and see, shining below, the clear, delicate blue of the eggs of the hedge-sparrow. Thus the following simple sentiment comes home to him at once :—

“ Behold, within the leafy shade
Those bright blue eggs together laid ;
On me the chance discovered sight
Gleamed like a vision of delight.”

Take again, the green linnet—“ a bird so like the dancing leaves ”—rejoicing in the early summer sunshine :—

“ Upon yon tuft of hazel trees
That twinkle to the gusty breeze
Behold him perched in ecstasies
Yet seeming to hover
There, where the flutter of his wings
Upon his back and body flings
Shadows and sunny glimmerings
That cover him all over.”



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Here is a sight familiar to all who have sought the eggs of the wild duck amidst the underwood of some lonely islet.

“ The o’ershadowing yew-tree bough
And dimly gleaming nest : a hollow crown
Of golden leaves inlaid with silver down
Fine as the mother’s softest plumes allow.”

Over and over again in Wordsworth one is struck by some poetical snap-shot, as it were, which gives us the bird exactly as it lives and moves.

“ The darkling wren that tunes its simple lay on Dudden’s side.
The cuckoo, “ with its twin notes inseparably paired.”
The flock of mallard passing at night.

“ I hear their wings
Faint—faint at first, and then an eager sound,
Past in a moment, and as faint again.”

And so on, well through the range of British bird life.

In Tennyson, again, the bird-lover finds innumerable pictures, each bearing the mark of close observation.

“ Look how they tumble the blossom, the mad little tits.”
“ In the spring a fuller crimson comes upon the robin’s breast.”
“ In the spring the wanton lapwing gets himself another crest.”

“ The many-wintered crow that leads the clanging rookery home.”

“ As the thistle shakes
When three grey linnets wrangle for the seed.”

Here is the golden eagle to the life—

“ He clasps the crag with crooked hands,
Close to the sun in lonely lands,
Ringed with the azure world he stands.
The wrinkled sea beneath him crawls,
He watches from his mountain walls,
And like a thunder bolt he falls.”

Here, again, is surely the very voice and spirit of the thrush’s early song.

“ Summer is coming—Summer is coming,
I know it—I know it—I know it ;
Light again—leaf again—life again—love again,
Yes ; my wild little poet.”

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Still, even Tennyson, notwithstanding his usual accuracy becomes from time to time problematical. What were the birds in the high hall-garden

“ Crying, and calling ‘ Maud, Maud, Maud!’ ”

It is said that a lady once propounded this question to the poet, suggesting a variety of interesting feathered songsters. “ Nothing of the kind, madam,” was the reply. “ They were merely rooks.”

It would be interesting if we could have a like interpretation of a somewhat obscure passage from “ In Memoriam ”—

“ When rosy plumelets tuft the larch
And rarely pipes the mounted thrush,
Or underneath the barren bush
Flits by the sea-blue bird of March.”

Now what is the “ sea-blue bird of March ? ” The swallow has been hinted at, but although it may be taken as the typical spring visitant, it is rather a straining of poetical licence to describe its black-purple colouring as sea-blue. The kingfisher, again, has been put forward as supplying the suggestion of sea-blue upon a summer’s day. But the objection arises that the kingfisher is not in any special sense a bird of March.

Still, we believe the authorities agree that Tennyson had the kingfisher in mind. Sir Herbert Maxwell, discovered the expression “ sea-blue bird of March ” in relation to the halcyon in one of the classics, and it may be assumed that the poet adopted it from this source.

It is perhaps noteworthy that Dante has never been accounted a poet of Nature. Innumerable quotations from Shakespeare, Tennyson, Wordsworth and other immortals are scattered broadcast throughout our literature, but the author of the “ Divine Comedy ” is rarely named as being concerned with such mundane things as

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birds and trees and flowers. Possibly the commentators have held that the fauna and flora of the *Inferno* would be, of necessity, a negligible quantity : but, if so, they have failed to grasp that the poet, however unearthly may be his vision, is forced to fall back on Nature for illustrations to give life and vividness to his pictures. And in this respect Dante shows a power of observation : a faculty for noting the more intimate ways and movements of living things that a Gilbert White might envy.

The “ *Divine Comedy* ” was written more than 600 years ago yet here we find the activities and characters of mammals, birds, reptiles, and insects observed with the precision of the trained scientist, and recorded with an accuracy that is never for an instant sacrificed to the exigencies of verse.

Birds play a considerable part in the great classic : not only the vague mystical forms that drift hither and thither in the land of shadows, but species clearly observed in their native haunts, and that may be readily identified. In Dante’s day hawking was the most widely recognised form of sport, and the technical allusions, and the subtle observation of intimate traits, go to show that the poet was, himself, a considerable master of the craft. To take up a hawk after a flight is often a troublesome business, especially when the bird is young and restless, and thus Dante expresses the manner of it :—

“ As falcon that has long been on the wing,
But lure nor bird has seen, while in despair,
The falconer cries : ‘ Ah, me,’ then stoops to earth
Wearied, descends, whence nimbly he arose,
In many an airy wheel, and lighting, sits
At distance from his lord in angry mood.”

Again :—

“ A falcon issuing from his hood,
That rears his head and claps him with his wings
His beauty and his eagerness bewraying.”

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“E’en thus the waterfowl ; when she perceives
The falcon near, dives instant down, while he
Enraged and spent retires.”

The true falcon, of which the peregrine is the type, is a bird of long wings, which give it remarkable power in the air : the goshawk has comparatively short wings, but commends itself to the falconer by its exceptional strength and ferocity that enable it to cope with quarry much larger than itself. This fact was known to Dante. What appears to be an unequal fray is described :

“ But the other proved
A goshawk able to rend well its prey.”

In a beautiful passage we read :—

“ Know ye not
That we are worms yet made at last to form
The winged insect imp’d with angel plumes.”

To “ imp ” is to supply missing wing feathers, and it is interesting to find this old falconer’s term applied to the pinions of those about to ascend to Paradise.

The stoop of a bird of prey is thus shown :—

“ A golden feathered eagle in the sky,
With open wings and hovering for descent :
A little wheeling in his aery tour,
Then, terrible as lightning, rushed he down.”

The poet’s observations of waterfowl are invariably true to life. The fact that wild geese and other species fly in a single line or in V-shaped formation is now generally remarked upon, but the fact that they rise in a mass and afterwards rearrange themselves has never been more clearly expressed than in the following lines :—

“ Like as the birds that winter near the Nile
In squared regiments direct their course,
Then stretch themselves in file for speedier flight.”

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Again :—

“As birds from river banks,
Arisen, now in round, now lengthened troop,
Array them in their flight, greeting as seems
Their new-found pasture.”

“ As cranes
Chanting their dolorous note, traverse the sky
Stretched out in long array.”

Pigeons are thus referred to :—

“ As a wild flock of pigeons to their food
Collected, blade or tares,
If aught alarm them, suddenly desert.”

“ As doves,
By fond desire invited, on wide wings
And firm, to their sweet rest returning home.”

In the present day attention is often called to the vast flocks of starlings seen :—

“ In large troops,
And multitudinous, when winter reigns
The starlings on their wings are borne abroad.”

The lark, of course, makes its invariable appeal to the poet :

“ That warbling in the air, expatiates long,
Then, trilling out its last sweet melody,
Drops, satiate with sweetness.”

Birds are shown greeting a morning in spring when “the tender maybloom flushed through many a hue in prodigal variety” appears :

“ On the tree-tops the feathered quirksters
Applied their wonted arts, and with full joy
Welcomed those hours of prime.”

Leaving the birds aside for a moment we may quote one observation that marks beyond dispute the eye keenly watchful for the more subtle expression of feeling by living things :—

“ It chances oft some animal bewrays
Through the sleek covering of his furry coat
The fondness that stirs in him and conforms
His outward seeming to the cheer within.”

Watch a rat or a mouse in a trap, with its head pressed closely in a corner and note how easily its agitated state of mind may be read :—

“ Through the sleek covering of its furry coat.”

SIDE LIGHTS ON BIRDS

It is always interesting to note the particular species of wild creatures that, for one reason or another, have attracted the attention of the poets. Walt Whitman, by reason of his American setting, speaks of many living things not met with in England. Thus he marks the croaking of the hylas, and the bellowing of the alligator in the swamp: at dusk he hears the hermit thrush—"the wondrous singer, the unrivalled one"—warbling its reedy song among the swamp-cedars, and at sunrise and sunset the clear musical call of the brown-breasted robin. The hermit thrush is the bird that the American ornithologist, Burroughs, regarded as equalling the best of English singers, adding: "To me its song is the finest sound in Nature." The robin referred to is the American migrant resembling in size and hue our own hen blackbird, and save for a reddish tinge on the breast, having little in common with our familiar redbreast. The high-hole named by Whitman as "flashing golden wings in lilac time" is a woodpecker, deriving its name from the lofty situation of its nest; and the phoebe-bird is a flycatcher not unlike our spotted flycatcher, which wearies one in American woodlands by its peculiarly mournful drawling notes.

Many poets touch upon animism—the living spirit that lies behind the appearances of Nature—with a guarded hand, fearing a recrudescence of savagery and remembering that it is the stuff of which myths are made. But Whitman casts prudence to the winds. "I swear I think now," he exclaims, "that everything without exception has an eternal soul. The trees have, rooted in the ground: the weeds of the sea have: the animals." In the death-chant that the venerable redwood tree utters we can readily imagine that the words were to Whitman no poetic fiction:—

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" Now yield we mournfully, majestic brothers,
We, who have grandly filled our time
With Nature's calm content, with tacit huge delight.
We welcome what we wrought for through the past,
And leave the field for a superber race."

The sense that the explanation of the mystery of life lies just behind a veil so near that it may almost be grasped—the sense that haunted Wordsworth and Jefferies—rose in Whitman to ecstasy. He feels it with such clear certainty that he never stops to argue about it. Thus the world becomes a wonder-land, and the meanest thing in it a miracle.

The fish poised in the pool, the bee feeding on the flower, the whirr of the rattlesnake, the cry of the night-owl, and not only these but the most commonplace sights and sounds of town and hamlet, all have a significance far beyond their mere outward seeming. In such a world anything may happen. The least insect or animal, he tells us, causes him to sing "ecstatic songs." The mystery is there not only in the peeping violet but in the spears of the onion.

It is instructive to turn from the older writers in order to note how the younger generation of poets stand in relation to Natural History. Francis Thompson has a prominent place in modern poetry, but although he has many beautiful lines on Nature generally, he is clearly no bird specialist.

" So know, this Lady Nature thou hast left,
Of whom thou fears't thee 'reft,
This Lady is God's daughter, and she lends
Her hand but to His friends."

Surely no higher encouragement to the lowly naturalist exists in literature. Nature, the poet considers, lives in the life of God, and it is only in so far that man lives in that life that he comes into true sympathy with Nature.

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It is as a philosopher rather than as a field naturalist that Thompson approaches Nature. Although he properly claims to share her "delicate fellowship" and to have "drawn the bolt of her secrecies" he gives us little in the way of direct personal observation. There are a few references to falconry, but these point rather to a desire for an illustration than to an interest in the ways of the birds in themselves:—

"The heavenly Falconer my heart debars,
And tames with fearful gloom
The haggard to his call."

"Firm is the man
Whose falcon soul sits fast,
And not intends her high sagacious tour
Or ere the quarry's sighted."

The rook is one of the few birds mentioned by name:—

"Rooks in spreading gyres like broken smoke
Wheel when some sound their solitude has broke."

The dove is also referred to:

"Sweet as the low moan that a summer dove
Fondles in her warm throat."

But for the most part a bird is but a bird and we can only guess at the identity of the "mad bird bacchanals" that:—

"Make adventure of sweet din
Till all the forest prosper into song."

Even the lark that

"Slips its shaken music,
An elfin avalanche."

appears incognito.

Thompson's landscapes, indeed, are singularly void of animal life and movement although trees and flowers are often named specifically.

With John Masefield, on the other hand, although he may neglect natural history in some

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of his works, he is wide awake when he is out in the open with "Reynard, the Fox," not only to the most intimate details of the business in hand but to every passing impression that the fields and woods may suggest. True, in a poem of this kind there can be no room for a finely-spun philosophy of Nature, nor for an elaborately worded description of her aspects, but in their place we get vivid glimpses of the things themselves that abide in the mind even as though our own eye had rested upon them. Never may we forget that the writer is riding for the most part hell-for-leather, or at best, permitting a tired horse to draw breath at the woodside.

"The wood stood silent in its host
Of halted trees, all winter bare,
The boughs like veins that suck the air,
Stretched tense, the last leaf scarcely stirred,
There came no song from any bird."

Now and again as the rider crashes through the wet, tangled briars, he disturbs a lurking pheasant; and hares and rabbits vanish like grey shadows from his horse's hoofs.

"The shaken brambles scattered drops,
Stray pheasants kukkered out of copse,
A blue, uneasy jay was chacking,
A swearing sound like tearing sacking."

Once a glimpse of partridges is caught

"In a clover stubble,
Crouched in a ring for a stoat to nubble."

And again a little party of long-tailed tits call attention to their presence by their tinkling notes:

"On the wind-bare thorn some long-tails prinking,
Cried sweet as though wind-blown glass were chinking."

And later:—

"A kestrel cruising o'er the meadow,
Watched the hunt gallop on his shadow."

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Then comes a glimpse of the fox :—

“ The lean red bolt of his body tore
Like a ripple of wind running swift on grass,
Like a shadow on wheat when a cloud blows past.”

Now he dives down a sheer declivity hoping
unavailingly to find an unstopped earth :—

“ Like the April snake whipping back to sheath,
Like a gannet's hurtle on fish beneath.”

Happily Reynard finds sanctuary at last, and weary horses turn homewards as the wintry evening falls. The single robin's note, the birds wheeling in the sky as they seek their roosting place, and the lights suddenly appearing in the distant village, are truly observed and beautifully expressed :—

“ The robin sang from a puffed red breast,
The fox lay quiet and took his rest
A wren on a tree-stump carolled clear,
Then the starlings wheeled in a sudden sheer,
The rooks came home to the twiggy hive,
In the elm-tree tops that the winds do drive,
Then the noise of the rooks fell slowly still,
And the lights came out on the Clench Brook Hill,
Then a pheasant cocked, then an owl began
With the cry that curdles the blood of man.”

April would appear to be one of the poet's favourite months :

“ April appeared, the green earth's impulse came,
Pushing the singing sap, until each bud,
Trembled with delicate life as soft as flame.”

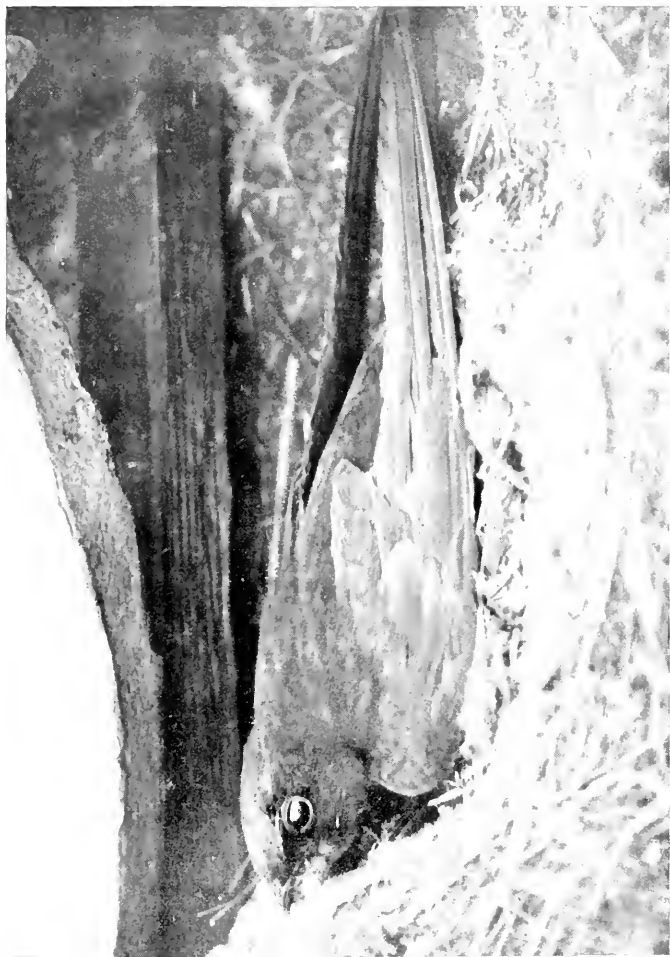
“ It was an April morning brisk with wind
And overhead the first-come swallow darted.”

We remember how Browning signalized the
“ month of daffodils.”

“ When the chaffinch sings on the orchard bough,
In England, now.”

Perhaps Masfield's line may come to be equally well remembered :—

“ There was all April in the blackbird's cry.”



SWIFT ON NEST

BIRDS OF THE BIBLE

CHAPTER XV

HABITS OF BIRDS AS DESCRIBED IN THE OLD TESTAMENT. DOMESTICATED BIRDS. CAGE BIRDS AND BIRD-CATCHING. CANON TRISTRAM ON BIRDS OF THE HOLY LAND. SWIFT, SWALLOW AND CUCKOO. SEERS AND PROPHETS ON "MIGRATION." BIRDS AS SACRED EMBLEMS.

In Genesis the creation of birds is placed after that of fishes and reptiles, and before mammals, a system of classification in strict accordance with the teaching of modern palæontology; birds, as Canon Tristram has pointed out, becoming numerous in the Chalk after the reign of the greatest monsters of the Wealden.

In the Old Testament interesting allusions are made to the habits of birds, and many sidelights are thrown upon the relation of man to the feathered races at a period long anterior to the birth of Christ. It would appear that before the Captivity, the Jews had no domestic fowls, except pigeons, a species which lent itself so readily to a kind of semi-domestication that it may easily claim to be the first of the avian races to fall under the dominion of man. Professor Lepsius, indeed, has stated that there are definite records of pigeons being kept in the fifth Egyptian dynasty about 3,000 B.C.

Still, apart from domestic poultry, it is clear that even in Job's time the caging of song-birds was a well-established custom, that birds were recognised ladies' pets, and that in the cases of

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the larger species, they were probably attached to stands by light chains, or cords, as parrots and cockatoos are fastened to-day.

“ Wilt thou play with him as with a bird, and wilt thou bind him for thy maidens ? ”

That the bird-catcher's art was well known to and regularly practised by the ancient Hebrews is clear from many references. There are seven Hebrew words for different kinds of bird-snares. The throw-stick, the springe, or snickle of wire or horse-hair—the clap-net—traps of various kinds, and decoy birds were all habitually used. In this connection it is interesting to note that in the still more ancient sacred writings of India the Upanishats—certain precepts which have been handed down from copies taken from thin oblong discs or plates, which were found attached to the altars of ancient ruined and buried temples—comparisons are made to the bird-catcher, “ like a bird caught in the fowler's lime.”

By reason of the variety of elevations and temperatures in Palestine, the species of birds to be found there are perhaps more widely diversified than in any other country of the same latitude. The most conspicuous feature is the very great number of birds-of-prey. The eagle, so frequently referred to, is believed by Canon Tristram not to be the golden eagle, but the griffon vulture, the type of Nistock, the eagle-headed god of the Assyrians.

The natural history of this most majestic bird is set forth in many graphic passages—the bare neck and head of the griffon is described by Micah : its swiftness in flight, keenness of vision, and habit of congregating to feed on the slain, by Job.

In Exodus, its care in training its young is depicted, and Jeremiah refers to its custom of frequenting the dizziest cliffs for nesting.

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The griffon has been known to live more than a hundred years in captivity, and this remarkable longevity is noted in the Psalms. The figure of this bird was the emblem of Persia, as well as of Assyria.

In other passages reference is made to the lammergeier or bearded vulture, and to the Egyptian vulture, the common scavenger of the East.

Of the true eagles the osprey is named, but this term probably includes all the smaller eagles of which there are many species in Syria.

The sparrow-hawk, kestrel, merlin, hobby, and others are all common in the Holy Land, but these would appear to be named indiscriminately under the common term hawk. The buzzard, of which there are three species in Palestine, is believed to be indicated by the word translated glede, and the kites, both black and red, the former the commonest of the scavenger birds-of-prey in the country, and protected by the villagers, are also named.

Of the owls, the Egyptian eagle owl is referred to, together with the scops, the tawny, and the little owl, the last being very common about all villages, ruins, and wells. It was the symbol of ancient Athens, the bird of Minerva or of wisdom.

The habits of the raven are frequently illustrated—finding its food on floating carcasses (Genesis), picking out the eyes of newly dropped or weakly animals (Proverbs), resorting to desolate places (Isaiah), its glossy black plumage (Canticles) and the distance it wanders for its precarious meal (Job).

In like manner the bittern once well known in English marshlands is described. It is still to be found in the reedy swamps of the Tigris, where

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its strange booming cry is said to resemble the wail of the hyæna. Throughout the Scriptures it is spoken of as frequenting waste and desert places, and is constantly used as the emblem of desolation.

In regard to domestic poultry, they would appear to have been introduced through Persia from India into Europe, and in our Lord's time were generally established in Palestine.

In reference to cock-crowing, the word "twice," recorded by St. Mark alone, is note-worthy. The cock crows about 2 a.m., and again at 4 a.m. In the idioms of the South Sea Islanders the earlier is called the "false" cock-crow, the later the "true" or more commonly the "cock-crow."

The brooding of the hen and her habit of sheltering the chickens beneath her wings are constantly used as typical of care and tenderness.

Of partridges, two species are common in Palestine, both different from ours, and both resorting to hilly ground. The francolin takes their place in the plains, and the various sand-grouse—one species of which appears at irregular intervals in England—are found in the deserts. In various passages allusion is made to the chasing of the partridge (probably with throw-sticks) on the mountains, to the continual robbing of their eggs by man, to the keeping of decoy partridges, a practice common to-day in the East. The quail, which is referred to as providing food for the Israelites in their wanderings, is of the same species as the birds known in Great Britain. On migration in spring they are in the habit of crossing the desert in countless myriads, flying very low, and often in the morning so utterly exhausted by their night's flight, that they are slaughtered by thousands. They always fly with the wind.

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The instinct of migration in birds, was, of course, too striking a phenomenon to have escaped the attention of Seer and Prophet.

From this, indeed, some of the most graphic and beautiful illustrations and figures of speech were drawn.

The migration of the crane, once a visitor to England, and one of the largest birds which fly, is referred to by both Jeremiah and Isaiah.

Canon Tristram tells us how the whooping or trumpeting of the crane rings through the night air in spring, and that the vast flocks which he noticed passing north near Beersheba, were a wonderful sight.

The periodical return of the stork, again, is noticed in Jeremiah. Its regular and sudden return is one of the most interesting natural sights in Palestine.

The expression—"the stork in the heavens"—refers to the immense height at which the birds fly during migration. The Hebrew name implies their maternal care, for which they have been famed for all ages. In all countries the stork is regarded with a kind of affectionate veneration, and is generally protected. In Western Europe it builds mainly on houses: in the East on ruins, and where buildings are scarce, on trees. The black stork (*Ciconia nigra*) always builds on trees. The black pinions of this stork, stretching from its white body, have a singularly beautiful effect. In Zechariah's vision the following passage occurs:—"Then lifted I up my eyes and looked, and behold there came out two women, and the wind was in their wings: for they had wings like the wings of a stork."

Some interesting reflections are suggested in regard to the swallow. In our translations two entirely different Hebrew words "deror" and

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“ sus ” are indiscriminately rendered “ swallow.”

It has been pointed out that the former—literally “ bird of freedom ”—alone refers to the swallow or martin : whereas the latter is unquestionably intended to designate the swift.

By this discrimination, apparent contradictions disappear, and the full force of the different passages is brought out. In Palestine the swallow is not a regular migrant, many birds remaining in the warmer parts of the country throughout the winter.

Again the note of the swallow is a soft gentle twitter, which might be taken as representing restfulness and security. The swift, on the other hand is conspicuous for the suddenness of its re-appearance in spring, and by the thousands in which in a single day it overspreads the whole country. In addition its cry is a shrill scream, which well might be interpreted as an expression of pain.

Thus the swift, together with the crane, and the turtle-dove may be regarded above other birds as “ knowing the time of their coming ” and the wailing of the sick king Hezekiah might fitly be compared to the querulous cry of the swift : the swallow, on the other hand, being used to typify gentler emotions and happy pastoral scenes.

The cuckoo is referred to on two occasions, and is classed with the unclean birds. Although our cuckoo is common in Palestine as a summer migrant, it is thought that the references in question are rather to the shearwater, which is eaten in the East, and to the various species of the sea-gull.

The dove is a bird which beyond all others has been used as the emblem of many sacred mysteries. In addition to the pigeons, which swarm

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in every village, coming home, as they do to-day to their "windows" or latticed openings, there are myriads of rock-doves—"doves of the valleys," "the dove that maketh her nest in the side of the hole's mouth"—in all the mountain gorges of Palestine. Their plaintive coo, and the metallic lustre of their plumage, are alike alluded to.

But it is around the turtle-dove that greatest interest gathers. It was the type of love. Its dark, lustrous eyes were the emblems of the eyes of the beloved one : its soft wings were the means by which the earth-wearied spirit was to rise at last to rest. Again and again this gentle and innocent figure is used to signify truths of the highest occult meaning.

From the prehistoric day when man first awoke to the wonders of the recurring spring, untold myriads of lines have been written in its celebration. But no lines, we imagine, have been written so simple, yet so perfectly descriptive, as these :

" For lo, the winter is past, the rain is over and gone,
The flowers appear on the earth, the time of the singing of
birds is come.
And the voice of the turtle is heard in the land."

FABULOUS BIRDS

CHAPTER XVI

GRYPHON. ROC. PHOENIX. LIVER. HARPY.

In ancient days men were not content with their more or less distorted observations of the wild creatures around them : they constantly set themselves to invent new ones. No doubt, as Conway says in his " Demonology and Devillore " the conception of many of these mythical monsters has arisen mainly from an exaggerated view of the forms actually in existence, but that in other cases, the invention of nondescript compound animals is traceable to a more artistic and poetic idea. Thus the Chimæra, Satyr, Harpy, and others may be taken to be efforts to realise types of evil, " the claw principle, fang principle in the universe, the physiognomies of venom and pain detached from the forms to which they are accidental."

In any case it is curious to note how prominent a place these apparently crude and barbaric inventions have taken, not only in poetry and sculpture, where a deeper underlying meaning is hinted at, but also in heraldry, and even in the signs and symbols of commercial enterprises.

Birds, of course, were naturally popular with the fable makers. The Gryphon was supposed

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to be a huge bird, with the body and limbs of the lion, capable of carrying off a horse or an elephant.

Sinbad the Sailor's Roc was probably of this species. The Phoenix, too, was plainly believed to be a real bird, with the power of rising from its own ashes when burnt, a quality which commends it to insurance companies. Pliny describes it as "by report as big as an eagle, in colour yellow, and bright as gold."

It has been suggested that the fable of the bird rising from its own ashes may have arisen from the fact that vultures in the East are known to descend upon bodies being cremated and rise again through the dense smoke.

A mythical bird less familiar than the Phoenix was known as the Liver and is said to have resembled the heron. It is stated that the name of the city of Liverpool was derived from this bird. The Harpy was a prominent figure in Grecian mythology. It was a combination of a woman and a vulture, and the name is incorporated in the English language to-day as symbolising rapacity, usually feminine.

PART II

SOME CELEBRATED HAUNTS

Birds of Shetland

CHAPTER XVII

CLIFFS AND MOORLAND. GOLDEN PLOVER. CURLEW AND WHIMBREL. SNIPE. RAVENS. CARRION AND GREY CROWS. DIVERS. RED-NECKED PHALAROPE. MERGANSERS. FOULA. VARIETIES OF CLIFF AND SHORE BIRDS. GUILLEMOTS AND PUFFINS, GREAT SKUAS AND TERNS. CORMORANTS AND SHAGS. THE TYSTIE. GREAT BLACK-BACKED GULLS. OYSTER-CATCHERS. AND RINGED DOTTEREL.

Shetland, the most northerly part of the British Isles, consists of a group of islands, about 30 of which are inhabited, whilst others innumerable are tenanted only by the ubiquitous wild fowl. The chief islands are Mainland, equalling about half the area of the group, Yell, Unst, Fetlar, Whalsay, Bressay, Papa Stour, Foula, etc. Inland, the country is mainly moorland, where the heather grows high, broken by stony ridges, and sloping to the numberless lochs. In the valleys by the loch-sides are small, square, cultivated patches, bounded by low stone walls. When vegetables are grown on the higher ground, they are enclosed in round watch-tower-like structures, a few yards in diameter, to protect them from the tearing winds.

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The aspect of the Shetlands has been described as bare and monotonous, but one is never far from a sight of the sea, and the coast-line, with its islands and splintered rocks rising from the white-lashed waves, is infinitely beautiful and varied. Foula, indeed, is said to possess the finest rock scenery in Europe. Lying 20 miles from the mainland, and bearing the full brunt of the Atlantic, the mighty cliff known as Kame Head rises 1,217 feet sheer from the sea.

Here, then, in this land of moor and loch, of sea-cliff and sheltered harbour, the hardier and wilder species of birds find a fitting home, the absence of pasture, wide hedge-rows, and spreading woodlands accounting for the lack of most of the gentler races—the warblers and others—in the nesting season.

Perhaps the most typical bird of the Shetland moorland is the golden plover. As it stands on a heathery summit in full breeding plumage, with its black and white breast, and with back and wings dappled in varying shades of old gold, and grey and black, it is seen well to deserve its name. Its nest is usually placed amidst the rocks and ling on the higher slopes. If it be approached the bird runs silently away for a considerable distance, where from some slight eminence it surveys the intruder, uttering the while its plaintive, piping cry. In the autumn the birds gather together, and may be seen feeding in numbers on the peaty islands, covered with green moss and intersected by oozy channels. It is one of the characteristic sights of Shetland to mark a vast flock suddenly sweeping over some rocky ridge, in the failing evening light, when the air is filled with their sweet call-notes which almost instantly become fainter and die away in the distance. The green plover, a bird so common

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on the Yorkshire moorlands, is, together with the grey plover, much less frequently seen in the Shetlands.

The curlew, too, of the Yorkshire moors, is in turn largely replaced in the Shetlands by the whimbrel—the little whaup. The whimbrel may be constantly seen on English estuaries and mud-flats in autumn and winter, but it returns to the more northerly latitudes to breed. It nests not infrequently in the Shetlands.

In the great tracts of marshy ground which skirt so many of the lochs the common snipe is exceptionally numerous. It is questionable even if in Kerry, so many birds could be found in a given area. The writer has a vivid recollection of an isolated bog in Papa Stour, of barely half an acre in extent, from which the startled snipe rose literally in dozens, and instead of leaving their haunt, were seen circling round in all directions, and constantly dropping back to the shelter of the high-growing reeds. The great snipe is of rare occurrence in the Shetlands, although in Saxby's notes several are recorded as having been shot. The jack occurs regularly on migration, and instances of its nesting there have been given. These, however have never been verified.

The raven is also a characteristic and abundant species in the Shetlands. Nesting for the most part in the sea-cliffs, it raids the whole of the moorland country around seeking for its prey. On the writer's first visit to the islands many years ago, an epidemic occurred among the ponies, which are allowed to run practically wild on the hills. It was then no uncommon sight to see six or seven ravens feeding upon a single carcase.

The hooded or grey crow is another conspicuous bird of the moorlands. These carrion crows offer a problem to those engaged in the classi-

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fication of birds which is by no means easy of solution. The hooded or grey crow at first sight appears obviously to be of a species distinct from the black carrion crow. In the first place, its plumage is parti-coloured—grey and black—and differs essentially from the total blackness of the carrion crow known in England. Again, the grey crow visits England on migration in winter only, whereas the black, when not resident, is a summer immigrant, and is known as a regular breeding species in this country. Furthermore, the habits of the two birds are in many ways dissimilar, the black crow being distinctly a tree-loving bird, whilst the grey is rather a frequenter of moors and waste places, especially of the low hills by the sea, and even of the shore itself. Yet to set against this, we have the curious fact that the two birds mate freely together, and that in the same nest young of both the black and grey forms are found. On these grounds, and by reason of their structural identity, the Editor of Yarrell concludes that no specific distinction can be maintained.

Perhaps the most striking species to be regularly found in the innumerable lochs of Shetland are the divers.. This small group, consisting of three species, the great northern and the black and red-throated, are well and aptly named. Divers they are essentially, every line of their graceful yet powerful forms being drawn with a view to swift progression beneath the water.

The great northern diver, with the jet-black plumage of his back and wings barred with regular lines of pure white, is a conspicuously handsome bird, the black-throat being only slightly less striking. Each of the three species frequents the sea—the great northern and the red-throat occurring on the English coasts in winter—but

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they mostly return in the summer to nest on the grassy islands of the northern lochs. We have no record of the great northern actually nesting so far south as the Shetlands, although birds in full breeding array are sometimes to be met with, but on certain of the holms of the more remote lochs the black-throat is still to be found, and throughout the whole of the north of Scotland, as well as in the Shetlands, the red-throat is a regular nesting species.

In the later autumn these birds take to the sea, and some time before the coming of bad weather may be seen with their long necks outstretched, making back for the land. From this habit the red-throat is generally known in Shetland as the rain-goose.

One of the most interesting birds of the loch, still to be seen in the Shetlands, is the red-necked phalarope. Sometimes, when one is fishing on the more secluded, reed-fringed waters, a tiny snipe-like bird, which may easily be mistaken for a dunlin, darts across the boat, with rapid beats of its sharp-pointed wings. To one's surprise, however, it suddenly drops into the water on nearing the reed-bed, and may be seen placidly swimming to and fro like a miniature duck. The nest is usually in a tuft of grass in a wet place, and the four eggs, sharply pointed, have a green ground colour with black markings. Unfortunately for its own chances of survival, the phalarope is of a singularly confiding disposition, and will often swim without alarm within an oar's length of the boat. On this account, a most interesting and attractive species—once plentiful in Shetland, Orkney, and outer Hebrides—is now represented by a few pairs only.

Of the ducks which frequent the Shetland lochs, the mallard is most frequently to be seen.



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GUILLEMOTS

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These birds nest everywhere on the islands and in the heather, and may be watched on any summer evening, together with the mergansers, conducting their tiny flotillas in and out of the reed-beds. Often as one fishes on some lonely loch amidst the hills, the beating of the wild duck's wings as it goes by over-head in the gloom is the only sound which breaks the still night air.

In the Shetlands, a tree is a thing hardly known. Many of the inhabitants have never seen one. On one occasion, the writer was invited to inspect a curious natural phenomenon of this order, but after a weary journey of some miles, it turned out to be merely a stunted willow or juniper of some two or three feet in height. No wonder if in this land, bare of coppice and woodland, the smaller passerines are conspicuous by their absence.

But if Shetland has no attractions for finch and warbler, it is a veritable paradise for the sea-bird. The greater part of the coast-line is broken into rocky harbours, where the sea-fowl may take refuge from the beating surf. On every hand splintered cliffs arise, offering innumerable ledges for cormorants, guillemots, and kittiwakes. The voes are well-nigh land-locked and are dotted with innumerable islets and grassy holms, affording admirable nesting-places for great and lesser black-backs, herring gulls and terns; and everywhere shingly beaches and sandy stretches may be found suitable for the ringed plover, oyster-catcher, and other shore-loving species.

FOULA.

This island is in many respects one of the most noteworthy breeding stations in the world. Shut off from the mainland by 20 miles of turbulent ocean, its three irregular mountain peaks stand clear against the sky, forming a land-mark

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which can be seen from vast distances. Foula stands in a position of even greater isolation than the notoriously desolate St. Kilda, inasmuch as it has no regular steamship service, and its only means of communication with the outer world is by casual trading vessels. So intermittent is the means of correspondence, that a man living at Walls, one of the nearest points on the mainland, informed the writer that he once wrote two letters, one to China and one to a friend in Foula, and that he received a reply from China first. It may be noted here that at election times the returns from Foula are the latest in the United Kingdom.

The houses, of the usual low, roughly constructed cotter type, are dotted about irregularly in the more sheltered nooks, and the inhabitants live mainly on their sparse crops and on the produce of the fishing ; the dried fish being called for at intervals by the smacks of the fish curers from Wick and Aberdeen, and tea, sugar, and other commodities being often given in exchange. One peculiarity of the natives is that they are nearly all blood-relations, for the women of the mainland can rarely be induced to take up their abode in a spot so remote and inaccessible.

As one approaches the island, when still some miles distant, small groups mainly of common guillemots and puffins are met with, growing steadily more numerous as the land is neared. Soon the vast cliffs seem to tower to the sky above one's head, and a marvellous scene is presented. The lower part of the precipice is cut off from view by an eternal veil of mist-like spray, constantly shimmering and breaking to give momentary glimpses of the rocks behind. Through this mist, sometimes ascending high, sometimes dropping to the sea, the shadowy

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forms of countless myriads of sea-birds—gulls, terns, puffins, guillemots—may be made out, their shrill cries ringing sharply above the muffled thunder of the surf.

On occasion here, in the clearer sky, a small colony of Arctic terns may be seen fishing. Light as gossamer they hover around, and when they fly over the boat, with beaks pointed to the waters beneath, the bright coral of their feet can be seen against their snowy feathers. Now one shuts its wings, and as though its form had been turned into marble, falls sheer into the waves. Unlike the gannet, however, it does not disappear, but as the splash subsides, it is seen fluttering upwards again with a tiny fish in its bill. As it rises to join its companions in the air, wild cries are heard—tee-e-e rac tee-e-e rac—in every direction, and suddenly a swift dark bird sails into view. Round and round the little white angler it darts until the latter drops its fish in terror, sometimes even disgorging those already swallowed. Before the prey can reach the water the pirate has seized it with a sudden downward swoop, and is soon making rapidly off. This bird—the great skua, the bonxie of Shetland—is one about which considerable interest gathers, for it represents a species which a comparatively few years ago was on the very verge of extinction as a British species. In the whole of the United Kingdom a few pairs only were known to exist—a small colony which nested on the slopes of Foula, and one, still smaller, on the more northerly land of Unst. Now, thanks to the fostering care of the proprietors, these colonies are becoming more firmly established, and during the last ten years the numbers of birds nesting have perceptibly increased.

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Sometimes a bird bearing a resemblance to a very large house-martin flits by—the forked tail, the disc of white, and the swallow-like flight, all seem familiar. This is the storm petrel, which, together with the rarer fulmar, nests in the cliffs. The white-tailed eagle was at one time a regular visitor, but its numbers have been reduced almost to vanishing point.

Both the cormorants, the green and the black, the former largely predominating, congregate at points on the splintered crags, and their nests may be marked, forming regular rookeries. It is, indeed, well-nigh impossible to visit any part of the Shetland coast-line without meeting with the skart, as the green cormorant or shag is locally named. Perched on prominent peaks, sometimes with outstretched wings like an eagle on a lectern, they deck the higher rocks. On the narrow almost submerged skerry, where the marine tangle rises and falls to the beat of the sea, one may see rows of their motionless snake-like heads. In the more sheltered bays many may be marked, swimming to and fro, and as the boat draws nearer, diving with a graceful curve of head and neck, to come up far away.

Rivalling, if not exceeding, the skart in numbers, is the black guillemot—the “tystie” of Shetland. In every tiny bay and harbour, and under the lee of every broken and pinnacled stack of rock, wherever, in fact, the troubled waters can find peace, are little family parties of “tysties.” The old birds, with their deep, black plumage, and broad bar of white across the wings, can easily be distinguished from the white-freckled birds of the year. Now one dives suddenly, and at times may be seen literally flying under water, the beating of the pinions having much more to do with its propulsion than the strokes of its red-

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webbed feet ; now it appears again at some unlooked-for place, as though nothing had happened, and rises erect in the water to beat the wave-drops from its shining wings.

On the less exposed sides of the island the sheer precipice falls away, and its place is taken by gentler declivities, where rank herbage grows amidst detached boulders. Here, as well as upon the isolated stacks and holms, the great and lesser black-headed gulls congregate, and here their nests of dry grass may be found. The eggs of both are usually three in number, and are of a drab or light-olive ground colour, blotched with grey and dark-brown. As it soars, snowy-breasted against the blue sky, the great black-backed gull is a singularly majestic bird—the largest of his race. Its power is matched by its voracity, and not content with fish, or with the wholesale destruction of eggs, and even of young birds, it will fall upon the weakling lamb on the hill-side, and rend it in pieces.

On many of the grassy holms to be found, not only in the voes but in the lochs, colonies of nesting terns take up their quarters. On landing on one of these the air appears to be suddenly filled with large white snow-flakes, and from every hand come the shrill protesting cries. As one stoops to examine the eggs, which lie on a mere skeleton of a nest in well-nigh every depression, one swift form after another will drop from mid-air, missing one's head by a bare hand's breadth, and ascending again to the heights in a single curve. The courage of the tern, and its fidelity to its young and fallen comrades, lead often to wanton destruction on these tiny islands. When a bird is shot the others cluster about it with distressful cries, and cases have been known where an entire colony has been pretty nearly decimated

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in a single visit. Fortunately this kind of "sport" is now keenly resented by both proprietors and natives alike, and gunners of the "'Arry" type, even when landing from palatial yachts, are no longer permitted to have a free hand.

Two other characteristic Shetland birds may be here referred to, the oyster-catcher, and the ringed plover. There are few prettier sights in bird-life than that presented by a large party of oyster-catchers as they rest upon and flutter around a stack of black, splintered rocks, with their magpie-like plumage and long sealing-wax bills, glancing in the sunshine, the blue sea for a background.

The ringed plover, too—the "sandy-loo" of Shetland—is beautifully in keeping with its surroundings. On the narrow margin of shingle and sand, which slopes to the sea, this little bird may be seen running swiftly, and when alarmed, rising with a soft, piping cry, alighting again at no great distance. Against the smooth surface of the sand the jet-black collar and white breast are at once conspicuous. But let the little sandy-loo but run upon a belt of shingle, and at once the eye searches for it in vain. The pebbles, smoothed and rounded by the sea, are of varied colours—brown, black, and pure white—and these match the hues of its plumage so completely that the small area upon which the bird rests must be examined with the utmost care before a living thing can be detected. Upon the shingle in a slight depression without nest of any kind, the four eggs, a pale buff streaked with black, are laid; and these again harmonise so truly with their surroundings that even when found, if the attention be averted for an instant, they seem to sink into invisibility.

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It may here be noted that the accepted names of both these birds are singularly inappropriate. Why a species which merely feeds, in common with other birds of the coast, partly on molluscs of various descriptions, should be specifically designated oyster-catcher, is difficult to see. Further, in its most active movements, the oyster hardly requires "catching," and it is so locally distributed that the vast majority of the birds have probably never seen one. Of the ringed plover, or dotterel, the word dotterel is entirely misleading, and the black markings which form a broad shield on the upper breast, and extend in a faint line to the neck, can only be termed a ring by a considerable straining of terms. Seapie, on the other hand, is a vivid word-picture of the one, giving in six letters its haunt and its characteristic appearance ; whilst sandy-loo identifies the second at a glance, combining as it does the bird's habitat with its familiar note.

THE OUTER HEBRIDES

CHAPTER XVIII

SOME LITTLE KNOWN ISLANDS. ROCKALL. BENBECULA.
FAIR ISLAND. VEE SKERRIES. SEVEN HUNTERS.

The Outer Hebrides have an unfailing charm for the naturalist. Much has been written of St. Kilda, with its mighty cliffs tenanted with gannets, fulmars and cormorants innumerable—an island made famous by its very inaccessibility and isolation. The bare, bleak expanses of Lewis, or the Lews, as the islanders name it, are memorable as the home of the “Princess of Thule,” and are kept in the public mind by the activities of Lord Leverhulme who is seeking to establish new industries there. But many of the islands in the Hebridean group are practically unknown: no foot of tourist desecrates their lonely shores: no steamer calls: they rest “for ever fixed in the solitary sea” grimly alone save for the sea-bird and the seal. Such an island is Sulisgeir, where the gannets nest in numbers that exceed those of the Bass Rock and Ailsa Craig put together. The main surface is a confused chaos of rocks, and the only trace of human habitation consists of a few roughly-built huts used as shelters by the men who come in due season to take the eggs and birds. Another is Rockall, an islet which, from its geographical position was at one time regarded as suitable for a meteorological station. But Rockall knows well how to guard its own privacy. When the weather is heavy it disappears in a mass of white



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foam : indeed, the Atlantic waves beat entirely over it. The investigator of Rockall gave a rather discouraging report to the Admiralty. "There is," he wrote, "no grass nor moss on the island. I could not say if there is any landing place, but should think not. I don't believe there is ever a day when a boat could come near it." In 1887, Mr. Harvie-Brown hoped to land there from his yacht, but was forced to abandon the attempt owing to the stress of the seas. It is said that the island has been visited by human beings, but if so the results of their exploration are very meagre. Major Fielden thought that the botany would prove the most interesting part, showing the distribution of plants in a purely oceanic area. "It would be well worth a visit," he added, "when every scrap of vegetation and lichens and mosses should be collected."

BENBECULA.

Another curious Hebridean island is Benbecula. It is not difficult of access in the sense that Sulisgeir and Rockall are, for instead of presenting a sheer precipice to the visitor it is practically a dead flat. But in order to approach it, it is necessary to acquire a clear grip of its individual peculiarities. The steamboat from the mainland will put you down on a certain flat rock, and if you have average luck, your lone figure will be noted by somebody, and a boat will be sent down the long rocky voe to your rescue. Or you may disembark on either of the adjacent islands, North and South Uist, each of which has a distinct landing stage, and at low tide you can walk to Benbecula on the sands.

The island has been described as follows :—
"The sea is here all islands and the land all

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lakes. That which is not mud is bog, and that which is not bog is lake, and that which is not lake is sea, and the whole is a labyrinth of islands, peninsulas, promontories, bays, and channels."

This picture of the quaint little Hebridean spot which is sandwiched between North and South Uist, is not, of course, literally true : but it produces the same sort of mental confusion which attends a sight of the place itself, and so has an artistic value. When a man leaves the Craighorry Inn on the southern shore and wanders forth unattended, he finds himself in a most bewildering network of land and water. As he rounds one heathery mound he discovers that the loch has stretched a cunning arm right across his path, and he is just about to retire discomfited, when he observes that the land has retaliated by throwing out a bridge to what a moment before appeared to be an inaccessible island. This trellised configuration makes walking difficult but it has distinct advantages for the bird watcher. The cliff species, the guillemots and gannets, are not much in evidence, although one or two of the latter may go over at times on their broad white black-tipped wings, but the place is a very paradise for the waterfowl. Wild swans, geese, ducks of many kinds including the eider—for many of the winding waterways are really arms of the sea—find here a congenial home. Snipe spring from the reedy pools, lapwings wheel in the air, ringed plover, oyster-catchers, turnstone and sometimes the rarer bar-tailed godwit, run hither and thither ; on the shingly banks ; and the interesting thing is that by reason of the sudden turns and of land and water, you find yourself constantly in close proximity to species that normally keep you at a respectful distance.

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FAIR ISLAND.

Midway between the Orkney and Shetland groups is an island known as Fair Isle, which, although it has no less than 130 inhabitants, is practically shut off from the world. The steamships that pass by on their way to Lerwick never call for there is no sufficient harbour, and the rocky coast is guarded by dangerous tidal streams. Sometimes in very calm weather, a considerate captain will stop his ship for awhile, when small boats from the island will come alongside, their occupants clamouring for discarded newspapers, or other tidings from the world of living men.

Dr. Eagle Clarke may be said to have brought the island into some prominence, for he discovered in 1905 that it was an ideal spot for observing the movements of migrant birds. Although it has an area of only a few miles he has shown from his investigations that it is visited by one half of the birds that have ever been known to have occurred in the British Isles, and he, himself, has recorded from Fair Isle several species new to the British list.

“The island,” Dr. Clarke writes, “is hardly known to the general public, save perhaps as the scene of the wreck, in the autumn of 1588, of ‘El Gran Grifon’ one of the ships of the Spanish Armada, whose crew spent several months there in a more or less starving condition, and in great wretchedness, for the dwellings of the inhabitants were then the filthiest hovels and the natives poverty-stricken in the extreme. It can boast, however, of having received some distinguished visitors in the past, for Sir Walter Scott landed there in August 14, 1814, and Mr. R. L. Stevenson paid a short visit in June 21, 1869.” Some years ago, attracted by the possibilities of

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Fair Isle as an observation post, the Duchess of Bedford, herself a keen and able ornithologist, took up a temporary residence there. Among the birds of extreme rarity as visitors to the British Isles, obtained by Dr. Clarke at Fair Island, are the Blue-throated Wheatear, Subalpine Warbler, Siberian Chiff-chaff, Lanceolated Grasshopper Warbler, Red-throated Pipit, Greenland Red-poll, Black-headed Bunting, Rustic Bunting, Yellowshank, etc. The Pine Bunting, Thrush-nightingale, Northern Willow-Warbler, Blyth's Reed Warbler and the Red-rumped Swallow, also recorded by Dr. Clarke, are new to the British list.

VEE SKERRIES.

One advantage of an interest in Natural History is that it constantly leads one to places that are neglected by the rest of the world.

A long wave-swept reef of rocks, barren and deserted, lying far from all recognised routes, and involving a toilsome journey to reach, has no charm whatever for the normally constituted tourist, even if he chances to notice on the map the small black dot that represents it, which is unlikely. Away to the west of the Shetlands is such a reef, known as the Vee Skerries. Possibly the crew of a stray whaler may run a boat once in the space of years into one of its weedy channels but there seems to be no special reason why they should do so. In any case the men who volunteered to conduct our little expedition from the nearest point on the main-land, said they had never landed there, and the idea of anybody even wishing to seemed to strike them as being strange.

At low tide a considerable area of rock lay uncovered, and in the deep clear pools, bright with vari-coloured seaweeds, the remains of wreckage might be seen that has probably rested there untouched for centuries.

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All around, the island gave one the impression of having been handed over to wild creatures from the beginning of things. From the sloping rocks seals slipped lazily into the sea, and remained near at hand, their round heads bobbing like corks, and their soft eyes turned with wonder in the direction of the strange invaders of their peace.

On the slightly raised plateau in the centre, shags, oyster-catchers, and black guillemots foregathered; innumerable terns and gulls, including the stately forms of the great black-backs hovered around, or rested on the sea, and a colony of turnstones were busily engaged on the, shingle and weedy stones.

Now our attention was attracted to some tiny birds flitting from rock to rock. They were clearly of warbler-like build, but in their immature plumage were not at first easy to identify. We knew them at last as pied flycatchers, plainly resting there on one of their strange journeys; but with no tree, shrub, or scrap of cover of any kind on the island, they seemed oddly out of place.

SEVEN HUNTERS.

Lying some 20 miles west of Lewis, and forming an outpost of Great Britain, is a curious group of islands known as the Fannans, or the Seven Hunters. These may well claim the palm for isolation, for they are guarded by precipitous cliffs, which slope for 200 feet or more almost sheer to the sea, and are normally inaccessible. One only, Eilean Mor, may be said to be inhabited for here is a lighthouse station, approached by a perilous stairway cut in the rock. The remaining six rest in the ocean with the raven and the peregrine in permanent ownership. Although they possess little or nothing in the way of cover, usually associated with bird life, the

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Fannans have the strongest interest for the ornithologist. Vast numbers of birds break their journey there, both on their spring and autumn passages.

Some idea of the number of bird visitors to these bleak outlying rocks may be gained from the fact that 115 species have already been recorded, including such extremely rare and unexpected varieties as the Short-toed Lark, the Two-barred Crossbill, the Siberian Skylark, and the Pratincole. One interesting experience mentioned is that on a certain morning following a high wind from the south-west, the island was found to be swarming with jack snipe.

As one thinks of these desolate rocks in the Hebrides the mind goes back to a very different scene.

In one of the vast Muskoka lakes in Canada there is a little island that is never visited, yet it is a perfect little paradise for the naturalist. From its soft grassy banks great maples spring, casting their shade over a vast profusion of flowers. Swallow-tails, black-veined browns, and many other butterflies flit hither and thither, and through the dark green leaves one may catch the golden gleam of the Baltimore oriole or the metallic sheen of the purple grackle. As evening draws near the strange cry of the whip-poor-will rings out from the woods, and the black bass begin to move in the rock pools.

A most charming little estate where, surely, a philosopher might live contentedly.

Yet it is unknown, or at any rate, the nearest inhabitant, a man who combined the duties of landlord of the hotel, land agent, and so on, had never heard of it.

However we located it together on the map. "Nice little spot, you think," he said. "Well, I'll sell it to you—15 dollars."



PIED FLY-CATCHER AT NESTING HOLE

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NORWEGIAN BIRD NOTES

CHAPTER XIX

BRITISH BIRDS IN A NEW SETTING. BIRDS IN THE OPEN SEA. STAVANGER. BERGEN. WHITE WAGTAILS, HORNELLEN. MULDOEN. UBIQUITOUS STARLINGS. HOW ABSENCE OF DARKNESS AFFECTS BIRDS. YOUNG FIELDFARES. THE NORDFJORD. THE STRYN VALLEY. CONCENTRATION OF BIRDS NEAR HOMESTEADS. FIELDFARE COLONIES. PRECARIOUS NESTING OF SPOTTED FLYCATCHER. PIED FLYCATCHERS. WHEATEARS. FAMILIAR BIRD FIGURES MISSING. THE JOSTERDAL GLACIER. COMMON GULLS NESTING. SANDENE AND SKEI. TAME MAGPIES. PIED FLYCATCHERS IN THE HOMES. SANDPIPERS AND REDSHANKS. A DIPPER'S NEST. THE BRAMBLING. NEDRE VASENDEN. ROOF GARDENS. RYPER.

Norway is essentially a land for the bird-lover. It may be that the English ornithologist, even he who wanders far from the beaten tourist tracks, may not meet with many species entirely new to him—the charm lies in the fact that here he will see birds which he has known as winter visitors only, nesting in sunny valleys at the feet of the eternally snow-capped hills; that here birds, rare in the British Isles, become of regular occurrence; and, finally, that the shyest species appear to throw off their reserve in Norway, and being unmolested by the gentle inhabitants, become the familiar friends of man, rearing their nestlings about his home-steads, and alighting upon bough, verandah, or roadway almost within reach of his hand.

In this land of mountain, pine-wood and lake, where mighty rivers leap over rocks a thousand feet high, and where the snows of the glacier

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creep even in July, down the declivities to valleys of the tenderest green, birds, butterflies, and flowers even the most familiar, stand out as it were in a new setting, and are invested with an interest unknown before from the wildness and wonder of their environment.

Leaving Hull on May 29 we note a few herring gulls hawking over the murky water. These follow the ship, and as we coast the long line of sand-dunes with the Spurn Lighthouse at their point, no other form of bird life comes in sight.

In the open sea, in the early morning, we mark one or two herring gulls still following in our wake, ready to swoop down on any debris thrown from the ship, and now and then a casual lesser black-back joins the group.

From time to time one or another of our attendants falls away, and for long we can follow with the glass its drifting form as it seems to wander aimlessly over the desolate waste of water. Now and again some refuse thrown overboard from the cook's galley causes wild excitement in the more persistent birds. Instantly abandoning the poised position, where, often on motionless wing, and with watchful heads turning from right to left, they have followed for hours the vessel's course, they drop with wild cries into the waves. Now one seizes some morsel and is at once attacked and pursued by his fellows ; and one notices again how out of the vast emptiness of sea and sky new-comers seem to spring into being, and join the gathering, which dispute for every scrap ere it is lost in the diminishing white line in our ship's wake.

Bird life in the North Sea is never very conspicuous, but at times, during the season of migration, some interesting incidents may be witnessed. We recall an August morning when

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from the upper deck we were able to make out a tiny bird far away, which later we saw to be a wheatear, barely topping the waves as it beat its lonely way against the wind. It appeared to be struggling to cross the ship's course, and at length it succeeded, dropping wearily on deck and taking refuge beneath the nearest chair.

It remained there all day, and we fear its assisted passage availed it little, for its destination was plainly England, and we were taking it back to Norway. In the morning it had gone.

It is midnight when the ship reaches Stavanger, with its quaint red, blue, and yellow wooden houses built far into the fjord. In the wan light gulls flit over the silent harbour, and here we note for the first time the common gull mingling with the more familiar herring and lesser black-backed. All through the wilderness of rocky islands, backed by the distant ranges of snow-capped mountains, which lie between Stavanger and Bergen, the common gull is rarely long absent, and later, in all the inland lakes, it comes to be one of our most familiar companions.

At Bergen, noted for its excellent museum and for its fish market where, from a line of tanks, the purchaser makes his selection from living fish of divers sorts as they swim hither and thither, and bears it home still flapping, in basket or bass, or on a wire attachment, there is little to remark in the way of bird-life. Sparrows and starlings haunt the streets, and the ubiquitous gulls move amidst the shipping, but save for the note of a willow-wren from some distant trees, and a white wagtail tripping on the stones of the quay, we find sparse material for the note-book.

An examination of this latter bird shows at once the difference between the white wagtail and our own familiar pied race. The bird, long

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ago set apart by Gould, and now described as *M. alba*, is also pied, but the darker plumage of back and wings lacks the clear-cut distinctness of our own magpie-like bird, and merges from the white into an iron-grey. Although the pied wagtail, as we know it, occurs in Norway and Sweden, it may be taken that the white is the form almost universally found on the Continent, and in parts of Norway it is almost impossible to find a house, barn, or saeter which this graceful little bird neglects to frequent.

On the question as to whether our pied wagtail should be regarded as specifically distinct from the light-coloured bird, Professor Newton writes in the fourth edition of Yarrell :—

“ The reader may gather that the editor, by his treatment of such cases as are afforded by *Parus ater* and *Acredula caudata*, is not prone to raise local races to specific rank on slight grounds, but the present differs from those cases insomuch as specimens intermediate in colouring seem to be wanting, and, though each form not unfrequently encroaches on the other's borders, and instances of their inter-breeding are said to be known, each very remarkably maintains its proper character.”

On the other hand, although it has been stated that some slight difference has been observed in the note, it cannot be denied that the distinction rests practically on the plumage, and that in their life and habit the two races are identical. They nest in the same kind of place, using a like material, their eggs are indistinguishable, and their movements in flight and on foot show no points of difference.

In the deep, black fjords, which lie between Bergen and the Nordfjord, although bird-life is, of necessity, sparse, many familiar figures may

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be noted. Gulls are always in evidence, and occasionally the form of a great black-backed gull looms largely amidst its congeners. Now, small groups of eider ducks move in the more sheltered estuaries, an oyster-catcher alights on a rock, or a black cormorant wings its sombre way across the fjord. Once a velvet scoter is marked in the distance, and on several occasions the dark form of an Arctic skua darts like a sinister shadow through little parties of gulls and terns, spreading instant dismay and confusion in their ranks.

Again it is midnight when the ship passes beneath the mighty rock of Hornellen, which rises for more than 3,000 feet sheer from the fjord. On a craggy island is the little hamlet of Muldoen, where the ship's captain courteously stops his engines in order to permit us to land. So in the wan light we descend the great vessel's side to the tiny boat on the black water beneath, and are rowed to where a tangle of quaint wooden erections mark the quay. The hotel—or what stands for such—is dark and appears to be uninhabited, but we find a supper spread, and from the many weird comestibles we select a meal. Later we are discovered by a sleepy hand-maiden, innocent of English, and eventually reach our beds.

The coasting steamer which is to take us down the Nordfjord is due at midday, so we have some hours to inspect our environment. We are in a black, rocky cup, the upper edges of which are broken into serrated crests, capped with snow. At our feet lies the fjord, and on the opposite shore, tiny red and blue houses are perched on apparently inaccessible crags, laced with white waterfalls. Muldoen itself, with its single road, irregular wooden houses, white church, and crudely painted hotel, clings to the side of a precipice, and as the eye is turned upwards, it

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is seen that every patch of earth in the crevices of the rock is shaped into a field, and that the main agriculture is conducted on angles which, in some cases, approach the perilous. Bird-life is by no means plentiful, but here, as elsewhere, the starlings are constantly in evidence. Before we arise the familiar cry greets us, as sternus alights on the spout of the hotel to feed its clamouring young, and later, at every landing stage, the black line which Jefferies says the starling appears to draw through the air may be seen by the eye of imagination, as the birds press in their urgent business to and fro, from every vantage ground in house or shed where a nesting site has been found.

It is an interesting matter for speculation how far the absence of darkness in the Norwegian summer night affects the bird population. Certainly, in the case of the starling, it appears to delude the parent birds into working overtime to an extraordinary extent. Seeing the birds still busily engaged at midnight and again often as early as three in the morning one might well wonder if they ever sleep at all. Smoking a final pipe, however, on the balcony of the hotel, which commands a view of a small fir-wood directly beneath, we are able to find something in the way of a solution of the question. At 12.10 we note a starling leave its nestlings, still noisy and hungry, in their cleft in the roof. It flies down and alights on a fairly conspicuous bough near the top of a fir tree. Here it remains motionless for half-an-hour or more, until we retire. Looking from the balcony again at 2.45, the dark form still faces us clearly visible in the broadening daylight. At 3.10 the clamour of the young stirs again the still air, and a glance from the window shows that the parents have resumed their daily task.

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At Muldoen one of the first birds to attract our attention is the fieldfare. There is no mistaking the hazel-brown and ash-grey of the plumage as the bird flits through the trees. A little later, from the rough tussocks and shrubs in the church-yard, a young fieldfare flutters up at our feet. The fieldfare nests fairly early in May, but at this date (June 3) one hardly expected to find the young already fully fledged. Later, when we come to investigate many large colonies, we find the nestlings in all stages of development, and out of some scores of nests which we examine, a very small minority contain eggs.

Now the steamer takes its way down the Nordfjord, that vast ravine where black precipitous rocks tower for thousands of feet, and merge into snowy crests, which stand pale and immaculate against the blue sky. Through this great fissure, which cleaves the mainland, we travel until at length, in the small hours of the morning, the estuary of Visnes is reached. The chief hotel, with its carved and gaudily painted verandahs and balconies, exists for the tourist crowd alone, and is not yet open, so we, perforce, take up our lodgment in the more modest hostelry which nestles in the trees a small distance inland.

At our feet, the Stryn River, famous for the weight of its salmon, joins the estuary, and when later, we trace its course upwards to the lakes from which it descends, we find it flows through a delightful valley, well wooded and cultivated, which turns out to be a veritable paradise of birds. Norway is often described as a land of desolation; and it is true, indeed, that one may travel for many miles through fjord, mountain, or pine wood and catch no glimpse of living thing. Here, as in so many places elsewhere, the larger

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forms of wild life grow warier in habit and fewer in number as the years go by. Sometimes in the winter from the point where we stand a giant moose may be seen to emerge from the forest edge, or the view of a herd of reindeer may be caught as they traverse the distant snow-field. The lynx and the bear still exist ; indeed, a fine specimen of the latter was shot by the farmers in the mountains that face us, during the present year, and foxes of giant size are not uncommon, but the wolf once numerous, has been exterminated, and the colonies of the beaver grow fewer and fewer.

In the case of the birds, it becomes clear as we journey that they are not spread broadcast over the land as they are in garden-like England ; rather do they seek certain places, some happy valley with sheltered homesteads, fields and woods, and here they concentrate, returning year after year to rear their young.

Such a place truly is the Stryn Valley, and one may safely say that the bird-lover may traverse the whole continent and find no spot richer in number and variety.

From the farmhouse at Gorvan, which lies midway between the estuary of the lakes, a score or more different species may be marked during the smoking of a pipe on the little balcony that faces the hills. From the right, where the green and white torrent of the river rushes through the pines and silver birches, the piping of the redshank and the sandpiper may be constantly heard ; now a broad-winged heron flaps overhead, or a pair of mergansers, their white-lined plumage conspicuous, go by. Over the hills, coming from the inaccessible crags where it nests, the dark form of the raven may be made out, or the higher-soaring hawk, but the latter, with the exception of the kestrel, seems to be rare. At the edge of a

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waterfall close to the road a dipper is building, and we see her from time to time turn from the broad thoroughfare of the river to follow the course of the streamlet-byway that leads to her home. Never for a moment are we without the white wagtails, drooping with soft call-note from the eaves of the barn, and tripping lightly on the road or on the steps of the house. Among other extremely numerous species are the yellow-hammer, wheatear, whinchat, willow-wren, white-throat, hooded crow, magpie, not to name the well-nigh ubiquitous fieldfare.

In Yarrell it is stated that Hewitson was the first Englishman to publish from his own observation an account of the fieldfare's nidification in Norway. He describes how after a long ramble through thick woods he was delighted to discover a colony, which he at first took to be shrikes. Whether the fieldfare was a less common bird generally in 1833, when Hewitson wrote, or whether in the area he visited the species was less prolific, we cannot, of course, say. But the fact remains that to-day, around the Nordfjord, and in all the road-side woods extending from Sandene to Vadheim on the Sognefjord, the fieldfare literally abounds, and is a far more common and conspicuous species than the thrush is in England. The nests are built in the most conspicuous positions, mainly in forks, but sometimes on the outer boughs of the various trees and bushes. The silver birch and the hazel predominate here and are largely chosen. Many nests can be reached without climbing, some are almost on the ground, and none exceed a height of some twenty or thirty feet. They are constructed after the manner of the song thrush's, but are deeper, and in the mud cup a lining of dried grass, three to four inches thick, is added.

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The eggs vary in colour from the blue-grey closely speckled type of the blackbird, to those of clearer ground colour with larger red markings, which remind one of the mistle thrush. In one instance we find an egg destitute of all markings; the ground colour a pale blue, resembling a starling's. The colonies are easily discovered, for as one approaches some thin belt of trees, the familiar "clack-clack" is heard on every hand, as the birds fly restlessly from branch to branch. Now, as one draws near the first prominent nest in the fork of a silver birch, others, equally prominent, spring into view, looming large through the thin veil of the leaves. The whole community is now in a state of excitement, and the owners of the nest we are examining make repeated onslaughts on the intruder, descending suddenly from a height after the manner of tern or skua, and sometimes barely missing one's head.

In other parts of the country we have usually found a minority of redwings in the colony, but here we meet with one example only.

In Norway one frequently sees a small cloud of fieldfares mobbing the hooded crow, and it is by no means uncommon to mark the arch marauder as he bears a fledgling away in his bill.

From this little balcony in the Stryn Valley, one is constantly attracted by some incident in bird-life. Now a spotted flycatcher alights on the rail, a bare hand's width away. Its demeanour plainly indicates a nest, but we look in vain for ivy or creeper which might form a suitable cover. Yet here the nest is—a small mossy cup—built without any attempt at hiding, in the spout which edges the roof of a lower building a few feet away. When the rain comes the nest must, of necessity, be inundated, but considerations of

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danger appear to affect the birds in no degree whatever. Another case of what must be described as almost criminally negligent nest-building comes to our notice a little later. A perfectly bare, fully-exposed wooden building stands near the road. Its blank exterior shows no projection nor lodgment of any kind, except the narrow ledge above the single window-frame. Yet upon this a spotted flycatcher's nest is precariously fixed, conspicuously inviting the attention of every passer-by.

Nor is the pied flycatcher much less reticent. These birds are exceptionally common, and in the Stryn Valley it is rare to visit any of the little clustering homesteads without catching a glimpse of the black and white plumes as the bird flits from roof or post. Many of the houses and saeters are constructed from old ships' timbers, and the holes through which the retaining bolts have passed form, apparently, most attractive passages for these little birds. On no occasion do we find a pied flycatcher nesting in the hole of a tree as in England, although we have no doubt that the occurrence is a common one. But in all the cases we mark, the flycatchers have taken advantage of these holes which conduct them to a cosy space between the outer and inner timbers practically within the house, and in one instance, the hen bird is sitting within a few inches of the family dining table, separated therefrom by the thin boarding alone, through the clinks of which she may be perceived.

Day by day willow-wrens are singing from well-nigh every coppice, and whinchats are hardly less common. The wheatear, too, is one of the more conspicuous birds, and following the habit of all the smaller tribes in Norway, appears to be drawn to the small areas where men mostly con-

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gregate. One may wander for days in the wilder and more desolate regions, and find woods and mountains alike empty of bird-life, but draw near the little cluster of saeters, rest awhile at the road-side that runs through the village, and one is often astonished at the number and variety of species which may be seen. In the case of the wheatears, the large stones which, in lieu of walls, are set up at intervals on the road-sides to protect the traffic are a constant attraction. From one to another of these the wheatears flit as the traveller proceeds, and as at each base there is usually some cranny or crevice, here the wheatears nest. Unlike the wagtails, which usually build at some little elevation from the ground, the wheatears prefer a hole into which they can run from the level of the ground below, and in none of the many nests which we examine, all containing young, do we find an instance where flight to the opening is necessary.

One bird enters a crevice of this kind, and on removing with difficulty a large stone, we find an empty nest, from which the young have plainly flown. We replace the stone, but on returning some hours later we still find the bird in attendance. As she continues from time to time to re-enter the deserted retreat, we remove the obstacle again, and examine the recess more fully. Hidden behind the soiled and bedraggled nest is a young wheatear, fully fledged and normally well able to take its place in the outer world; but around one leg some thin, strong fibres, or hairs, have become so securely twisted that the bird is held captive to the spot. So tightly has the ligature become bound to the limb, probably in the nestling's earliest infancy, that the whole of the foot has practically disappeared, and the bird remains secured by the

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stump alone. After setting the captive free and replacing the stone we are pleased to see the mother, who from her expostulations has plainly mistaken our intentions, at once re-enter, and we can only trust that the cripple, notwithstanding its early misfortune, may prosper and live to make some return for the maternal devotion.

We leave the little valley of Stryn with regret, but as our aim is to explore some of the more remote lakes in the hills with the view of testing the trout fishing we cannot remain longer. Our next stop is at Loen, and here, in a birch wood on the mountain side, we catch our first glimpse of the green woodpecker. Most of the familiar species are to be met with here, including the pied flycatcher and the fieldfare. In the early morning a whitethroat sings incessantly in the bushes beneath the window, and sandpipers and redshanks call from the banks of the estuary.

Many birds, however, which one might well expect to meet with are conspicuous by their absence. House- and sand-martins are fairly common, but we see one example only of the swallow, and none of the swift. The twite is constantly seen, but the grey linnet and the lesser redpoll evade our attention, if they are present at all. Of the tits, too, we find no trace of the blue, although we rarely travel far without falling in with both the great and the coal tits. The fieldfare is, of course, the representative thrush, but we see no single example of our own song thrush, and but two of the English blackbird. At Loen we find a solitary specimen of the robin, the only bird of the kind, with one exception, that we meet with during our tour. Chaffinches are common, and the brambling, in suitable places, scarcely less so, but a single pair of bullfinches alone reward our search, and we see nothing whatever of the common crossbill.

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One feature of Loen is that it is partly surrounded by the great Josterdal glacier—the largest glacier in Europe. At certain points the ice precipices descend into the valleys, and as the ice melts the outflow from these form rivers that take their broken course through great desert areas of rocks borne down from the mountains.

Here a colony of common gulls is nesting, and when we approach they at once rise and fill the air with their protesting cries. As we rest behind a rock, however, peace is gradually restored, and watching through the glasses we see the gulls, one by one, subside upon some grassy hollow in the stones, and resume their position on the nests. In order to reach them it is necessary to wade through one or more of the ice rivers which meander through the stony desert, and soon the nests are all around us, each conspicuously placed on some slight elevation, with the brown, mottled eggs in full view. On most of the islands and promontories of the lakes in the hills the common gull is a constant nesting species, and shares with the redshank and the sandpiper the solitudes which are rarely invaded by man.

Leaving Loen, we take the coasting steamer which brings us to Sandene, an important centre, with distinct traces of a street. Here civilisation is rife, for not only is the telephone in general use—this is now a mere common-place in Norway—but a commodious motor car, known as the “'bile,” awaits us at the hotel door. Those who remember the precipitous ravines which lie between Sandene and Redd, when the little stolkjærre appeared at times to be standing almost on end, supported only by a cautious pony, which felt its way down the smooth rocks after the manner of a fly descending a window-pane, might well pause to wonder how the “'bile” was about to perform its office.

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But the driver takes the road with calmness and discretion, and although in places where the track is hewn from the living rock, five hundred feet above the black waters of the lake, his outer wheels have rarely more than a few inches to spare, he continues his course with speed scarcely abated.

At certain points on the journey, little crowds, mainly of children, still gather to gaze on the wondrous machine, but for the most part, curiosity and awe have been relegated to the ponies and cattle. Now and again, at some awkward turn, we come suddenly on a herd of the latter, browsing on the steep roadside. Instantly they throw up their deer-like heads, and career down the track, followed cautiously by the new-fangled monster; now, a small rift comes in the dense edging of trees, and the slim, dun forms burst through the coppice and make for the peaceful heights.

In about four hours Skei is reached, a delightful fishing centre, set at the head of the Jolster Lake, and with a chain of lesser but more prolific lakes behind. A small garden is attached to the hotel, and here a family party of magpies have taken up their residence, the abandoned nests standing conspicuously in the upper branches of a fir tree. The young birds roost night by night in the garden, and throughout the whole day flutter around the hotel, closely attended by their parents. They have all the appearance of being domesticated, and should a stray dog venture into the enclosure, which they have come to regard as their own, he is instantly mobbed by the older birds. The plan of campaign is for each parent to alight in turn on the summit of a fir tree, then to drop suddenly, with indignant cries, almost upon the back of the amazed dog, and to return at once to the point of vantage to

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prepare for a further attack. The persistency and regularity of the movements of the birds have plainly a most bewildering effect upon the intruder, and he makes his escape from the disturbed area at the earliest opportunity.

To the left of the hotel, built in irregular order, in a setting of firs and silver birches, are a number of small wooden houses, and here the wagtails and pied flycatchers have formed quite a little settlement of their own. In one case the house is constructed around a large rock, and one approaches the doorway by climbing from one natural ledge to another. On this stairway of Nature an old woman, wearing the picturesque head-gear of her country, is seated, busily knitting. At the side of the house a tree in full green leaf grows, barely hiding a small round hole in the timbers at the side of the doorway. Here the little pied flycatchers pop in and out ; now the sober-hued hen alights on the rock at the old dame's feet ; now the cock airs his black and white plumes amid the green leaves within a few inches of her long steadily moving needles. Perfect familiarity has removed all trace of fear on the one part, and of curiosity on the other. The patient knitter never raises her head to glance at the birds ; the birds pursue their daily labours, with little interludes of song and flirtation, without reference to the house-mother, who watches over the common home. With the chickens on the rock, clustering about the doorway, and frequently entering the room, the little family picture is complete.

The lakes behind the hotel form a chain, linked together by a narrow river. In one case the channel is barely wide enough to admit the boat, and the propelling is done by thrusting an oar into either bank alternately. The banks rise high

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above one's head, and are covered with a dense tangle of vegetation, the yellow fluff from the willow-catkins forming in places a deep bed on the surface of the water. These channels, rarely disturbed, form delightful sanctuaries for many living things. Here the willow-wren, yellow-hammer, tree-pipit, chaffinch, brainbling, mallard, dabchick, and many other species may be noted.

In some places the crystal-clear water is eight or ten feet deep, and one may see the great trout lying like shadows amid the variegated mosses below. Resting here to evade the glare of the sun, one may come to learn something of the ways of the fish, and it appears no longer strange that for hours at a stretch the surface of the lake should show no sign of life, although, later, for no apparent reason, the whole glassy expanse is broken by rising trout.

The fact is simply that for periods, more or less long, the trout rest in the lower deeps, asleep, or, at any rate, oblivious to all that may be passing around them. Peering into the glassy depths, we see one long dimly outlined form lying on the silver sand, just clear of a dark tongue of weed that projects from the bed. A worm dropped cautiously from above passes him within a few inches but he gives no sign of recognition. Save for the movement of fins and tail as they sway, weed-like, in the current, one might take him for a submerged log of wood. For an hour or more he lies thus ; if he moves at all it is but to drift lazily a few feet away, and resume his position a little lower down, turning his head again to the running water.

But now a change comes ! The sun still beats down unpityingly. There is no change in the atmospheric conditions that we are subtle enough to note. But a sudden awakening appears to

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come simultaneously to all the fish in this pool of glass. Forms before unnoted spring into being from the clustering weeds, and cruise hither and thither as though bent on some urgent quest. Our own goodly trout throws off his lethargy, and with one vigorous sweep of his tail rises high in the current, and is lost in the crowd of hurrying forms. And the uprising, whatever may be its cause, is not confined to the denizens of our little pool. It is as if the trout in the whole water possessed one soul in common, and that the impulse that moved the one swept through the entire community as a single vibration. Looking through the vista of the trees to the erst-placid lake beyond we see that the whole surface is alive with dimpling rings.

In the channels, wherever broken masses of stone appear through the vegetation, white wag-tails may be noted, and sandpipers and redshanks constantly flit from rock to rock. The redshanks nest about the lakes in great numbers, and wherever one lands it is clear from the distressful notes of the parent birds that they have young hidden in the herbage in the near neighbourhood. Over-anxiety is the bane of the redshank race. The passer-by would constantly take his way unheeding, through the tussocks, were it not that the two slim brown forms, their white plumes and long red legs conspicuous as they fly, almost bar his passage, alighting on every vantage point of rock or rail, even at times on the stunted trees themselves, in order to protest in the most vociferous terms against his intrusion.

From the great snow-capped mountains which partly surround the Skei lakes a mighty waterfall descends, the broad white line on the heights breaking into a hundred foaming channels as the rocks crop up to divert the water's course. The

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varying torrents rush into one vast black cup of rock, the deeps of which may be seen only in glimpses when the veil of spray is for a moment wafted aside. Into this roaring chaos a little dipper, bearing food in her bill, and looking strangely small and insignificant against the colossal wall of water, disappears at regular intervals, soon to emerge and to beat her steadfast flight down the short river which leads to the lake. It is impossible to see the nest, but imagination can easily picture the mossy dome perched on the dripping ledge faced by the dense curtain of perpetual spray. In this strange nursery the little dippers first see the light, and here they await the coming of the food-bearer, who punctually bursts upon them through the curtain, irradiated by rainbow gleams of green, red, and gold, which shuts them out from the unknown world beyond.

From the foot of the waterfall the ground falls in an easy slope, where trees are set at intervals—mostly silver birches and hazels—after the manner of trees in an orchard. Many birds flit hither and thither—fieldfares are busily engaged in feeding their clamorous young; spotted flycatchers dart from dead, overhanging boughs, returning sentinel-like to their posts; a gleam of black and white through the leaves marks the position of a pied flycatcher; and from the rocks of the turbulent little river ring incessantly the cries of the sandpiper and the redshank. Now a sound coming from the summit of a denser cluster of silver birches attracts the attention. It rather resembles the deep “tween-tween” of the greenfinch, but with care it is easy to detect a difference in the quality of the present note from that of the more familiar cry. Besides, hitherto we have found no sign of the greenfinch in the lands

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through which we have travelled. A flutter comes in the leaves, and a gleam of white-lined wings is caught, that at first points to the chaffinch ; but in a moment more the bird hops upon an outer spray, and the clear black and chestnut plumes clearly disclose the brambling. In the deeper cover the nest is at last made out. It is placed in the outer boughs of a birch some ten feet from the ground, and it is possible to bend down the branches by means of the hook on the landing net, so that the mossy cup can be inspected without need of climbing the tree.

The nest strongly resembles that of the chaffinch, but is looser in construction, and is decorated with shavings of different hues, which the bird has borne from a saeter near at hand, where a wood-cutter has been at work.

The eggs, too, may easily be mistaken for those of the chaffinch, especially in the matter of the spots, which have the slightly inflamed appearance characteristic of the chaffinch's, but the ground colour, in a general way, appears to be slightly redder. We should imagine from the types we have seen that the eggs of the brambling show a greater variation than those of the chaffinch. Of the three nests we came across one was placed in the slender fork of the main stem of the tree, and all were close to the river ; one, indeed, was upon a small island.

The Jolster Lake, 16 miles in length, lies in a cup surrounded by more or less precipitous mountains. The little steamer Skjold, plies daily between Skei or Upper Vasenden and Nedre Vasenden—in English, the lower end of the water. The hotel here commands a wonderful view of the river, which rushes in a mighty flood into the ravine beyond, tearing through a labyrinth of huge boulders, and losing itself later in a network



BRAMBLINGS

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of green islands and promontories, where the silvery hues of the birches gleam against the darkness of the pines. For the whole of its course this river presents a succession of beautiful scenes. Now its single channel is pent in to the breadth of a few yards by black walls of rock ; now it broadens into great lagoons, with placid margins fringed with reeds, where the mallard and dabchick sport ; and, again, after a headlong plunge through a stony gorge, it finds peace again in the recesses of the woods, where it divides into many rippling streams, each following a devious way through a tangle of over-hanging leaf and bough.

From time to time most of the birds of the river may be seen here—the redshank, sandpiper, and dipper are never far away—and as one wanders in waders through the leafy streams of this angler's paradise, where the trout run to a good pound or more, and twenty may be regarded as an average basket, the birds treat him as a friend, and luncheon time is enlivened by the presence of chaffinch, brambling, flycatcher, and willow wren in the boughs above his head, and with the constantly attentive wagtails tripping on the shingle at his feet.

One interesting feature in Norway is what may be described as the roof garden. On many of the saeters and lower buildings the thick covering of turf which forms the roof provides a soil in which many grasses and flowers, and, on occasion, trees of considerable size flourish exceedingly. These little patches of often quite luxuriant vegetation, raised to a convenient elevation above road or field, form a favoured haunt for many varieties of birds. On the ash tree, for example, which springs from the angle near the chimney of one of these, a magpie alights

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chattering ; pipits and wagtails thread their way through the herbage, turning to right or left to snap a fly ; willow-wrens flit from branch to branch, and now and again a hooded crow alights with down-stretched legs, coming familiarly to the spot as though it were a home. Sometimes, on the face of these buildings, nesting boxes are placed, thus giving the place the appearance of a hostelry for birds, of which they are never slow to take advantage.

Of the trout fishing which awaits the man who is prepared to break away from the beaten tracks, and to accept for a few days at a time the somewhat crude hospitality that an uninhabited saeter affords, this is not the place to expatiate. But for the bird-lover as well these isolated regions have many charms. On one island, for example, we find the reed-bunting nesting in close proximity to the ryper. The ryper is a true grouse, and as it rises from the heather and brags down in the clustering willows by the edge of the lake, the familiar " go-back, go-back," brings the mind back at once to the moors of Ilkley or Blubberhouses. The ryper's nest is possibly of somewhat neater construction than that of our own red grouse, but if it were not for the conspicuous bands of white on the wings of the former, the most devoted " splitter " of species might be hardly put to it to detect a difference in the birds themselves.

In these casual notes we have made no attempt to cover the Norwegian fauna which may be met with even in the course of a holiday ramble, but we trust we have been able to show that the land of the Vikings is by no means the birdless desert which certain recent writers have made it appear to be.

BIRDS ON A SWISS GLACIER

CHAPTER XX

A VALLEY OF BUTTERFLIES. THE NUTCRACKER. THE
BUZZARD. A GLIMPSE OF SNOW BUNTINGS. THE ALPINE
ACCENTOR. CHOUGHS.

In the depth of winter, when the rain and sleet drive ceaselessly all day against the window, it is always pleasant to turn the thoughts to sunny days in lands distant from this somewhat drab England of ours.

On the July morning that we have in our mind the sun beats pitilessly on the little village in the valley. The red roofs and the painted walls of the houses are aglow. As a diligence, with its tinkling bells, ascends the hill, the dust of the road rises in a hot white powder. One feels little desire to leave the cool shade of the verandah of the Kurhaus, set in green trees on the mountain side.

It is pleasant to sit here and note the wonderful variety of colour in the picture, which rests before the eye. The village itself is radiant in many hues—red, green, and white predominating—while the ruder chalets of rough logs supply the more sombre tints, brown, amber, and many shades of grey. But even here in the meanest house, some bright colouring is added—a cluster of purple hydrangeas or the scarlet gleam of a mass of geraniums peering from some little window box glow in the sunshine.

As one looks down the valley the scene is one of summer's prime. The peacock-blue lake

SIDE LIGHTS ON BIRDS

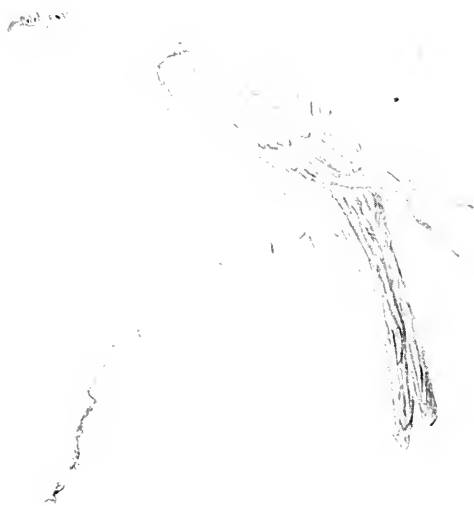
shimmers through the dark green pines : the sunny meadows are smooth and green : many coloured butterflies flit amidst the tangle of tall growing weeds and flowers just beyond the verandah.

On the blossoms crowning one isolated stem, we mark a dozen silver-washed fritillaries, and ever and anon, a stately swallow-tail, flying high like a bird, droops to this tiny island of bloom. On every hand the shrill note of cicadas comes from the hot grass. But, if the eye be turned upward, Nature at once takes on another aspect, and the very season of the year seems to change at a glance. Here the rocks towering sheer for a thousand feet or more, are dark and threatening, and the pines, clinging to their stern sides, have a weather-beaten look. Beyond the jagged lines the higher mountains rise, and, at last, ranged against the sky, are the peaks of snow, set in an unchanging winter.

It is to one of these higher and less frequented Alps that we propose to take our way. It is by no means a fashionable summit, and bears no well-known name. It is so remote that the chamois, which has disappeared from so many of its old haunts in Switzerland, still finds refuge in its crags, a circumstance which adds no little to its attraction. To make the long ascent with comfort, or even with safety, the weather must be taken into account.

Fog is a dire enemy to the climber. Thunder storms gather and break on the heights with an intensity unknown on the lower ground. Then, too, it is well to travel in the evening or in the early hours of the morning, before the sun makes the snow rotten and wearisome to tread.

So we may loaf in the shade of the pine trees, or smoke the pipe of peace on the verandah, until the day is well advanced.



KITE

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BIRDS ON A SWISS GLAZIER

At 5 p.m. the guides are already waiting : thick-set fellows picturesque in dress and accoutrement, ruck-sacks to carry our provisions on back, ropes coiled about the shoulders, glittering ice-axes in hand. The heat of the day has now spent itself. Slowly our small procession takes its way up the gentle mountain slope. The track is narrow, and from time to time we stand aside to allow the hay-carts, with their long tail-boards resting on the ground and drawn by the slow, mild-eyed oxen, to pass by.

From the point of view of the naturalist the country is disappointing. Once, in the lower bushes, we catch a glimpse of the quivering tail of a redstart, and now a familiar meadow-pipit sits piping on a rock, which stands starkly in the lush grass. Occasionally, a lizard streaks across some brown patch in the herbage, but for the most part the way is desolate of living thing.

Stay : little by little the path has grown steeper : now it winds through the gloom of a pine belt. From this wood a strange bird-cry proceeds. We wait and listen. The notes are repeated : a harsh, "crah, crah," somewhat jay-like in tone. Through the wood the path comes to the light again on the edge of a precipice, where, thousands of feet below, the milky hued glacier water dashes through the rocks. A dark bird form flies through the trees, alights on the path far ahead, and may be seen moving amidst the grass and stones, seeking for food as a jackdaw might. It is far away, and refuses to permit a nearer approach, rising at once, and alighting again at a much greater distance. But the glass has already brought it nearly to our feet, and, for the first time, we see the variegated plumes of the nut-cracker in its native haunts. Further in the ascent, the path, partly hewn out of the face of the

SIDE LIGHTS ON BIRDS

cliff, gives a good footway, but with little to spare. It tends upwards, and ever upwards; by slow degrees the darkness falls, and one by one the stars appear in the velvet blackness of the sky.

We are travelling now through a chaos of huge detached rocks, following every turn of the shadowy guide. At length he pauses and points to a faint patch of whiteness in the gloom above. The first stage of our journey is nearly at an end.

The Club-Hutte—the hospice where we may rest and sleep awhile—is at hand.

The interior of the Club-Hutte is of the simplest. Now that the small lamp glimmers on the rude, deal table, we may peer into the shadowy recesses. The walls are of bare stone. At the further end is a wooden platform which extends across the whole breadth of the structure. Upon this is a mattress, and, depending from a rope stretched from wall to wall, are rugs, to serve for covering. There is no superfluous luxury here. Our meal is of the simplest, and we sleep on the bare mattress stretched within a few feet of our dining table. But before we turn in we have time for a pipe. We stand for a little time on the terrace of rock just outside the door. The stars seem almost within reach of the hand.

For a while a great wreath of cloud beneath our feet obscures the valley. Now it blows aside, and for a moment we see, glittering in some immeasurable depth, the lights of the Kurhaus.

It is still dark when we arise. Dressing is a brief process, for we have merely divested ourselves of our boots.

After a rinse in the little, ice-cold torrent in the rocks, we are ready. From the terrace we can make out the changing shapes of the mist, as it seethes beneath our feet, like smoke from some giant cauldron.

BIRDS ON A SWISS GLAZIER

Now the path winds up the steep side of the cliff, and for an hour or more we climb, taking heed of each step, for the soft shale crumbles and breaks at every footfall. At length we reach a more level expanse, where vegetation grows freely. The character of the ground is strange : huge tussocks arise on every hand like grave-mounds. The valley is still hidden in darkness and mist, but higher, the vast range of snow peaks stand pale against the sky. Soon a faint bar of light rests on the horizon in the east. One by one the distant summits are touched with rose. The bar of light deepens and turns to ruddy gold. Peak after peak arises in dazzling whiteness, and the rose and azure and gold glow on a myriad heights. For awhile these shining lines of white hills seem like islands rising from a sea of clouds. But soon, as the sun lifts itself clear of the horizon, the shadows turn and flee, and great rifts are cut sheer in the mist. Here, for a moment, we mark a great bird-of-prey—probably a buzzard—hanging motionless on its wings. Hemmed in on either hand by dense, murky walls of mist, it looks down through this shaft of light to unfathomable deeps where the little villages appear set in green plains : then with a hardly perceptible beat of its great pinions, it sails into what seems to be the solid masonry of clouds.

On the nearer heights the plumes of the pine trees still rooted in mist come into ken, and little by little the whole landscape is swept clear, and a new world of rock, and wood, and torrent, of snow, mountain and nestling hamlet rests in the morning sunshine.

We have now reached the foot of the jagged line of crests at the point where the ascent may be most easily made. Here a halt is called, and the ropes are got ready. As we rest, the eye is

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cheered by a little party of snow-buntings, a most pleasant sight in this well-nigh birdless land. They come forward with sweet call notes—the white bars on their wings contrasting with the dark rocks.

But we have little time to wait. Already we are bound together like convicts, with a gaoler guide at either end of the rope, and the gang is set in motion by a slight jerk.

The great ice-field slopes upwards to the sky, a glistening white expanse, broken to the right by masses of dark rock. For awhile the ascent is gradual, and there appears to be little need for the provision of the ropes.

Still we are bidden to walk warily. Long cracks are visible in the snow crust, and these mark the dreaded crevasses—great fissures in the solid ice below, which have become silted over with snow.

A false step here, and the powdery coating gives beneath the feet, and the careless traveller disappears to find a narrow grave a hundred feet or more below in the heart of the ice. This is no imaginary danger. Only a little while back two men were lost at the same point, and their bodies never recovered.

This risk accounts for the great precaution of the experienced guides. Properly roped, a trip on one of the smaller crevasses means a mere stumble in the snow, the tightening ends at once preventing a further descent. Now we are favoured by a sight which means much to the lover of wild nature. On a small range of crag, rising from the snow, a dark form is seen moving.

The glasses are at once brought to bear. There can be no mistaking the alert form, the graceful limbs, the strangely curved horns of the chamois.

For a moment he rests as though surveying the intruders curiously then he moves higher, leaping

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lightly from point to point, and as we look back from afar, he is still visible, standing sentinel-like amidst the peaks.

For hours, one sees little save the foothold cut in the white face of the peak, which gives room for the next step. Nothing occurs save when a carelessly held alpenstock falls clanging from point to point, or when a guide pauses to mark the woolly, starlike flower of the edelweiss, springing from a crevice.

Now we have rounded an overhanging cliff, and a stony track lies ahead. Amidst the scattered boulders peeping from the snow, a small brown bird moves unobtrusively, picking up its imperceptible food with the slight shuffle of wing one knows so well. Yet who would have thought to see a hedge-sparrow on these stern and barren heights? Surely its proper sphere is the moist earth amidst the gooseberry bushes of an English cottage garden. Unlike our former acquaintance, the nutcracker, the bird makes no effort whatever to evade attention. It permits us to approach within a few feet, and, even then, it merely sidles into a rock crevice, as a wren may be seen to enter the crannies of the river bank, not in fear, but in the course of its own peaceful avocations.

Impatient at its non-appearance, we throw a large stone at its hiding place : in a moment more it emerges at the other side of the little group of rocks, and again it stands within full view, well within reach of the alpenstock. Noting it now more carefully, we see it to be slightly larger than our native hedge-sparrow, and the redwing-like plumes on its side are distinctly visible. This—the Alpine Accentor—is a bird one would go far to see. It is in no place, we believe, very numerous, and some three or four occurrences only have been recorded for Great Britain.

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At length the highest summit of the mountain group is reached. At last we lie panting on this uppermost peak, with the world at our feet. A myriad hills are ranged around us. In the hazy distance the Jungfrau arises, and, peering through a wreath of mist, stand the stern heights of the Wetterhorn. And as we rest and smoke, a dark cloud of birds appear around the edge of the cliff below.

Like jackdaws, but with swifter and more varied evolutions in their flight, they cluster and perch about the ledges of a great rock mass near at hand.

Their red beaks and legs stand out conspicuously against the background of stone.

Again we murmur inwardly that, apart from the marvels of hill and rock and sky, the sight of this party of choughs in their native haunts would have well repaid all our trouble and toil.

SOME CANADIAN BIRDS

CHAPTER XXI.

THE WHIP-POOR-WILL. CANADIAN SINGING BIRDS. THE PHOEBE BIRD. AMERICAN ROBIN. BLUE JAY. RED-WINGED BLACKBIRD. TITMICE. WOODPECKERS. HUMMING BIRDS. PURPLE GRACKLE. BALTIMORE ORIOLE. BELTED KINGFISHER.

From early morning all through the hot, blue day, the little steamer wends its way through the Lakes of Muskoka. At times, the vast expanse of water seems to be a veritable sea with a distant, dimly defined coast-line; now the land draws closer, forest trees wave overhead, and the boat winds through the narrow labyrinths of innumerable islands.

Sometimes singly, sometimes in little groups, the scanty passengers are landed at unexpected piers which consist of a few planks, creeping into the water from the dense greenery, to be instantly swallowed up by the illimitable forest, and the wanderer whose destination is the head of Lake Joseph finds himself alone on deck.

Night falls gently and imperceptibly, yet as it would seem almost suddenly. A few moments ago the sky was blue, and the wavelets were dancing in the sunlight; now a soft brooding darkness steals over the scene, leaving the white wake of the steamer alone clearly visible against the formless shadows of the woods.

At the moment of the turn from day into night, a sound strange to English ears rings from the trees—"Whip-poor-will—Whip-poor-will."

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The cry begins with a menace, but it dies down in a wild lament. Now it is close at hand, now it comes faintly from the more distant thicket, for the whip-poor-will, like our own nightjar, to which it is allied, utters its characteristic notes from the least expected quarters. Following the whip-poor-will's startling outbreak, a dull "boom-boom," falling at measured intervals, breaks the silence. The bull-frogs are beginning their monotonous concert that goes on all through the night.

In the early morning the ripples dance on the lake, and the sky wears again the unvarying blue of a Canadian mid-summer day.

Men speak of England as the Old Country, but surely these primeval forests that encircle the little wooden hotel, set back in the clearing, that have never been meddled with since creation, more truly deserve the name.

From the tiny pier, the eye rests on vast sheets of water, dotted with plumed islets, and on the woods that stretch to illimitable distances, which have been touched by no hand save that of Nature, through the uncounted centuries. One must indeed go warily when one ventures from this hotel clearing, bounded by the roughly hewn palisades, for it is easy to lose all bearings, and one might travel a thousand miles without striking the semblance of a road. From the over-hanging maple trees, from the reeds at the lake side, and even from mid-air, come the mingled notes of birds, and we pause for a while, seeking to detach one reiterated sound from the chorus in order to identify the songster from which it proceeds.

Many of the notes seem familiar, yet, when we listen attentively, they all seem to have some quality that renders them strange to us.

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Again, there seems to be no singer here with a clear predominance over its neighbours : no outstanding thrush on the tree-top : no loud rattling chaffinch : no lark holding unquestioned mastery of the sky.

Indeed, we listen in vain for a gentle ripple of song even so distinctive as that of the willow-wren. In effect, the notes seem blended into one long musical murmur, broken now and again by sharp twitterings, and yielding no single strain that one can detach from the rest.

This, of course, must be taken as the first impression of one listening to new bird-music in a foreign land, and it may well be that none of the characteristic Canadian singers chanced to be in evidence at the moment, for Burroughs tells us that the hermit thrush, to take a single instance, may fairly compare with our own British throstle.

As one listens in the shade of the maple trees, one note coming from the boughs just above our head begins to take on a special significance of its own.

It is a low, rather melancholy note, constantly repeated, and we become aware that it is being uttered by quite a number of birds in all the trees around. We soon make out the singer if so it may be called : a bird of dull brown hue, somewhat larger in size and heavier in build than the spotted flycatcher of our own country.

By degrees we come without much difficulty to separate the birds we see into groups analogous to those of Great Britain, although of course, the species themselves differ more or less widely.

Thus we find owls, woodpeckers, crows, swallows, finches, warblers, and so on, yet in every case the birds themselves stand out with marked features of their own.

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Thus a form moves in some bushes near at hand that we see at once is a jay, but a jay of gorgeous blue brighter than English coppices can boast: again, a blackbird flits across the clearing in the old familiar way, but as it alights we see that its shoulders are bright red, plainly the red-winged blackbird of the text-books. And, so, in finch and warbler, bright tints of vivid blue and glowing scarlet speak of a new fauna in a new and wonderful land.

It is an interesting experience to wander in these primeval forests for the first time. One looks in vain for one of the little winding tracks that prove that human feet have worn at least one almost imperceptible pathway through the tangle. Here the woods offer no short cut to a village or even to an isolated homestead, and it may be that many years have gone by since the hand of a man bent back the low sweeping branches in order to force a way to the little natural glade beyond.

Now and again, what appears to be a long rounded mound, overgrown with thick hanging moss and studded with silvery lichen, bars the way. In stepping on one of these the foot sinks deeply into rotting wood, and one realises that it is the trunk of a giant tree, brought to the earth one windy night, it may be a hundred years ago.

In this wilderness where Nature is the only woodman, the trees spring untended, live out their vast span in summer's heat and winter's snow, unnoticed, and at last crash to the ground to lie there until earth slowly spreads her winding sheets of moss around them and draws them gently back to herself. It is indeed, by no means an uncommon thing, even on the stillest day, to hear the sound of some distant fall, and then the back woodsman in reply to your look of inquiry murmurs, "Ah, only a tree."

SOME CANADIAN BIRDS

As one rests by the mossy trunk in perfect stillness, the true wood-dwellers, scared for a moment by a hitherto unheard-of presence, begin to resume their normal activities. There is a dead stump some few yards away, the relic of a mighty tree, broad and hollow at the base, with a jagged and broken summit about four feet from the ground.

We catch a glimpse of a little chipmunk peering at us from the end of a mossy mound, now, another of the squirrel-like creatures, with its grey and white streaked coat, leaps like a flash across the green barrier, and in a moment the two tiny heads are together, gazing at the monstrous thing that has invaded their sanctuary.

They are ready to dive at the smallest movement, but they soon come back.

Still they are too far away for their scrutiny to be successful, and at last one sidles through the wood-tangle, until it is lost in the hollow stump : a moment later its inquisitive head appears through the splinters at the top : now it is joined by its companion, and the two small faces close together, surveying the crouching stranger now near at hand, form a little woodland picture not soon forgotten.

In a morning's ramble (bearing the caution of our host in mind on the danger of wandering far, although, as a matter of fact we got lost in the end) we find many novel sights and sounds to attract the attention.

Identification of birds by a stranger in the land is often a difficult matter. With some birds their mere appearance proclaims their names. The flash of gorgeous red and black is the scarlet tanager, as certainly as the gleam of living blue against the green leaves is the indigo bird. Others again leave more to the imagination.

SIDE LIGHTS ON BIRDS

There is a bird, for instance, carefully examining the decayed stumps, and again hanging back downwards. From its characteristic movements and tittering cry, it is plainly one of the titniece. It has much of the colouring of our own coal-tit, but is obviously larger.

It permits the nearest approach, and we have now no hesitation in putting it down as the black-capped titmouse, the chickadee of Canada.

Soon the familiar tapping from a tree marks the presence of a woodpecker. From the distant glimpse of black and gold that we are able to obtain as it flits through the broad green leaves, as well as from its large size, we take it to be the golden-winged species, usually named the high-hole, from the situation of its nesting site.

At this point, we find ourselves in a lovely little glade, nearly bare of trees, but with dense walls of forest on either hand. Wild flowers grow all around in vast profusion. Many butterflies flit by, and their unfamiliar hues often force us to pause and endeavour to repolish our dull memory of the characteristics of the New World's lepidoptera. Two species however, stand out beyond all question. Drooping from the skies, a great butterfly, with golden-brown wings sharply veined with black (the black-veined brown), alights on a little blossom almost at our feet, and a little distance away, slowly opening and closing its black and yellow wings, is a gorgeous swallow-tail.

Here too, on the high flowering bank of the little clearing we get a glimpse of another curiously butterfly-like, or rather moth-like form. Like a green jewel on wings it winds swiftly through the topmost stems, checks its course for a second before some tempting flower as though about to alight, goes on again, and at last stops abruptly on wings quivering so rapidly that they seem

SOME CANADIAN BIRDS

motionless, before a wide-opened bloom set high in the bank.

It stays, alas, for the briefest time in full view ; in a moment more, its gleam is lost in the mazes of wood, but we have at least caught a fleeting vision of the ruby-throated humming-bird, the wonderful little migrant that comes back faithfully to its summer home in May.

Later in the day, we mark another bird that we have long wished to see in its native haunts. It is fluttering at the edge of the wood, but it rests at last, on an outstretched branch. It bears the unmistakable golden-orange and black uniform of the Baltimore Oriole.

We see many other interesting forms in our too brief stay : a purple grackle, like a long, slender jackdaw, but iridescent like a starling : a belted kingfisher, bright plumaged, but less graceful than our own familiar bird.

And morning by morning, we see in the grass the bird like a hen-blackbird with a dull red breast—a familiar sight, indeed, on every Canadian lawn—the American robin.

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